

TECHNICAL MANUAL

CERTIFICATION MANUAL FOR MINIATURE/MICROMINIATURE (2M)/ MODULE TEST AND REPAIR (MTR) PROGRAM

ORGANIZATIONAL, INTERMEDIATE, AND DEPOT LEVEL



This manual supersedes:
NAVSEA TE000-AA-MAN-010/2M, dated 1 March 2003
NAVAIR SE-004-PQS-000, dated 1 March 2003

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

Published by Direction of Commander, Naval Sea Systems Command

0910-LP-104-6875



TE000-AA-MAN-010
167 589500 00

TECHNICAL MANUAL CERTIFICATION SHEET

CERTIFICATION APPLIES TO: NEW MANUAL REVISION 1 CHANGE

APPLICABLE TMINS/PUB NO.

TE000-AA-MAN-010

PUBLICATION DATE (day, month year)

21 May 2007

READING GRADE LEVEL (RGL):

N/A

TITLE

CERTIFICATION MANUAL FOR 2M/MTR PROGRAM

TMCR/TMSR/SPECIFICATION NO.

NONE

CHANGES AND REVISIONS

PURPOSE

THIS MANUAL PROVIDES CERTIFICATION PROCEDURES AND REPORTING REQUIREMENTS FOR THE MINIATURE/MICROMINIATURE (2M)/MODULE TEST AND REPAIR (MTR) PERSONNEL, 2M/MTR REPAIR SITES, 2M/MTR TRAINING SITES, AND 2M/MTR CERTIFICATION SITES.

EQUIPMENT ALTERATION NUMBERS INCORPORATED

NONE




TMDER/ACN NUMBERS INCORPORATED

NONE

CONTINUE ON ADDITIONAL PAGES AS NEEDED

CERTIFICATION STATEMENT

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ACQUISITION	NAME	SIGNATURE	ORGANIZATION	CODE	DATE
	GARY S LATTA		NSWC CRANE	608BR	05/21/07
TECHNICAL	NAME	SIGNATURE	ORGANIZATION	CODE	DATE
	DAN RODGERS		NUWC DET NORFOLK	2504	06/03/07
PRINTING RELEASE	NAME	SIGNATURE	ORGANIZATION	CODE	DATE
	BRETT E ESTES		NSWC CRANE	6083	05/21/07

21 May 2007

NUMERICAL INDEX OF EFFECTIVE SECTIONS/PAGES

List of Current Changes

Original 0

21 May 2007

Only those sections/pages assigned to the manual are listed in this index. Insert _____ dated _____. Dispose of superseded and deleted sections/pages. If changed pages are issued to a section, insert the changed pages in the applicable section. The portion of text affected in a changed or revised section is indicated by change bars or the change symbol "R" in the outer margin. Pointing hands or change bars as applicable indicate changes to illustrations.

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003 00	2M/MTR SITES

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A (B blank)	0	Appendix C / C-1:4	0
C Foreword (D blank)	0	Appendix D / D-1:4	0
001 / 1:6 (6 blank)	0	Appendix E / E-1:2	0
002 / 7:24	0	Appendix F / F-1:18 (F-18 blank)	0
003 / 25:36 (36 blank)	0	Appendix G / G-1:6 (G-3 blank)	0
		Appendix H / H-1:8 (H-2 blank)	0
		Appendix I / I-1:4 (I-2 blank)	0
		Appendix J / J-1:4	0
		Appendix K / K-1:2 (K-2 blank)	0
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		Appendix N / N-1:4	0

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FORWARD

This manual provides certification procedures and reporting requirements for the following:

- Miniature/Microminiature (2M)/ Module Test and Repair (MTR) Personnel
- 2M/MTR Repair, 2M/MTR Training, and 2M/MTR Certifying Sites

These requirements and quality control procedures are provided so that all activities involved in the certification process will be familiar with them.

This manual is designed to help the following program users in the certification process:


- SYSTEMS COMMANDS
- FORCE COMMANDERS
- TYPE COMMANDERS
- MAINTENANCE AND LOGISTICS COMMANDS
- EXPEDITIONARY FORCES
- REGIONAL MAINTENANCE CENTERS
- DEPOTS
- TRAINING SITES
- COMMANDING OFFICERS
- END USERS

Use of this manual increases the accuracy and efficiency of the 2M/MTR Program in two ways. First, the end user can ensure the command is capable of providing quality 2M/MTR diagnostic testing and repairs per applicable directives. Secondly, the use of this manual will ensure that uniform certification requirements and procedures are used by all activities.

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CERTIFICATION MANUAL FOR THE 2M/MTR PROGRAM

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INTRODUCTION

Reference Material

In case of a conflict between the text of this document and the references cited herein, the text of this document takes precedence.

Reference Number	Title
NAVSEAINST 4790.17 (series)	Fleet Test and Repair of Shipboard Electronic Equipment
OPNAVINST 4700.7 (series)	Maintenance Policy for Naval Ships
OPNAVINST 4790.2 (series)	Naval Aviation Maintenance Program
OPNAVINST 4790.4 (series)	Ships' Maintenance and Material Management (3-M) Manual
OPNAVINST 4790.13 (series)	Maintenance of Surface Ship Electronic Equipment
COMFLTFORCOMINST 4790.3 (series)	Joint Fleet Maintenance Manual
NAVSUP Publication 485	Afloat Supply Procedures
COMDTINST 4790.2 (series)	Coast Guard Module Test and Repair (MTR) Program
COMNAVSPECWARCOMINST 9401.1 (series)	Miniature/Microminiature/Automatic Test Equipment Repair Program
COMNAVAIRFORINST 4790.42 (series)	Miniature/Microminiature Electronics Repair and Module Test and Repair Workcenter
NAVAIR 01-1A-23 NAVSEA SE004-AK-TRS-010/2M MARINE CORPS TM 5895-45/1C USAF T.O. 00-25-259	Standard Maintenance Practices for Miniature/ Microminiature (2M) Electronic Assembly Repair
NAVSEA S9665-CY-OMP-010/PRC-2000/U NAVAIR 17-15-99 MARINE CORPS TM 09458A-14&P/1B ARMY TM 11-6625-710-14&P	PRC-2000-2M System, Electronic Rework Power Unit Operation and Maintenance Manual
NAVSEA SE010-A7-MMC-010/MBT-250-SD/U	Station Electronic Rework Power Unit, MBT-250-SD, Operation and Maintenance, Organizational/Intermediate Level
NAVSEA MIP 6652/005 NAVAIR 17-600-193-6-2	Pace Soldering Station Maintenance Requirement Cards (MRCs)
NAVSEA MIP 4911/00	Module Test and Repair (MTR) System Maintenance Requirement Cards (MRCs)
NTP S-30-8711A	Navy Training Plan (NTP), Navy Miniature/ Microminiature (2M) Electronic Repair Program
A-100-0058	2M Technician Recertifier Course
A-100-0072	Miniature Electronics Repair Course
A-100-0073	Microminiature Electronics Repair Course
A-100-0074	2M Instructor Pipeline
A-100-0076	Module Test and Repair Equipment Operator Course
A-100-0135	Miniature/Microminiature Instructor Initial Skills Course
A-100-0136	Miniature/Microminiature Instructor Certification/Recertification Course
A-100-0144	2M Technician Recertifier Requalification Course
M09E2D1	Micro-Miniature Automated Test Equipment Technician Course (Marine Corps ground)
NAVEDTRA 135	Navy School Management Manual
00032540	8007-0161(17794) PRC2000-2M System Allowance Parts List (APL)
00035587	8007-0161(17794) NAVAIR Unique, PRC2000-2M APL
00041450	Portable 2M Kit, APL

Reference Number	Title
2-670034080	Tools X Equipment-2M Repair Stations AEL
00041165CL	AN/USM-674(V) APL
00036925	2M/MTR Piece Parts-ACU4, ACU5 APL
00035230	2M/MTR Piece Parts- LCC, LPD, LSD, LST APL
00036683	2M/MTR Augmented Piece Parts- LCC, LPD, LSD, LST APL
00035228	2M/MTR Piece Parts-CG, DDG51 APL
00036684	2M/MTR Augmented Piece Parts-CG, DDG51 APL
00035229	2M/MTR Piece Parts-FFG7 APL
00036686	2M/MTR Augmented Piece Parts-FFG7 APL
00035231	2M/MTR Piece Parts-MCM APL
00038733	2M/MTR Piece Parts-SSBN APL
00035233	2M/MTR Piece Parts-SSN APL
00031205	Standardized IMA/MTR APL
00036544	Expanded IMA/MTR APL
00039106	2M/MTR Piece Parts-LPD-17
00046414	2M/MTR Augmented Piece Parts-LPD-17
00040856	2M/MTR Piece Parts-LHA, LHD, AS
00031457	2M/MTR Piece Parts-USGC-WHEC
000A1714	2M/MTR Piece Parts-USCG-WMEC
000A2963	2M/MTR Piece Parts-USCG-WAGB-20
SL-3-09458B	Marine Corps Stocklist, Maintenance Kit, Electronic Equipment, Model MK-2663/U
SL-3-11302A	Marine Corps Stocklist, Tool Kit, Electronic (Portable 2M Kit), Model TD-8641

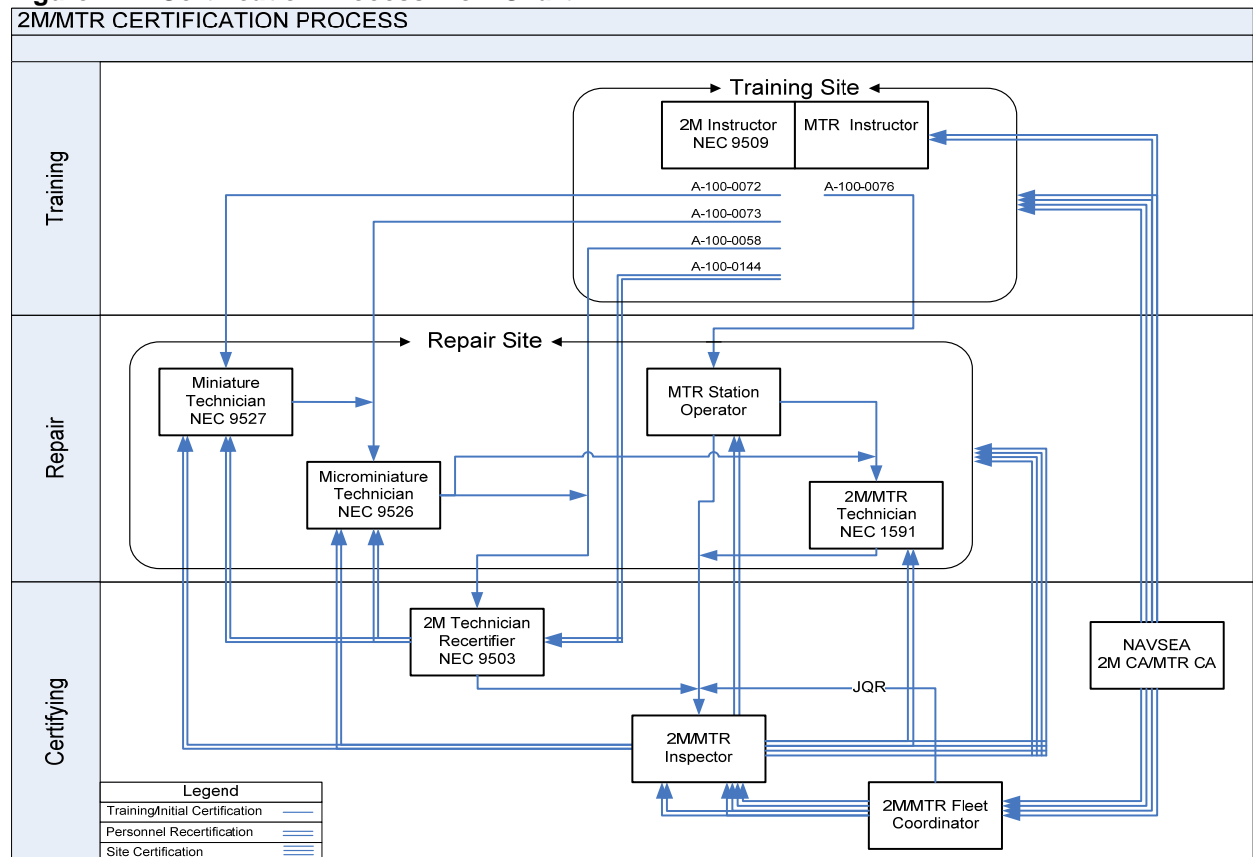
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1.1. PURPOSE. This manual provides the certification criteria for all 2M/MTR technicians and sites under the auspices of the 2M/MTR Program. The Certification Process, shown in Figure 1-1 establishes standards and procedures to ensure the continued quality of 2M/MTR diagnostic testing and repair performed by the fleet. Certification identifies personnel who have demonstrated the ability to do quality 2M/MTR diagnostic testing and repair, and provides the means of implementing approved new techniques and procedures.

Figure 1-1. Certification Process Flow Chart



1.2. RESPONSIBILITIES. Major program administration and management responsibilities are defined in OPNAVINST 4700.7(series), 4790.2 (series), NAVSEAINST 4790.17 (series), and COMDTINST 4790.2B (series).

1.3. CERTIFICATION LEVELS. Table 1-1. *2M/MTR Personnel Requirements* identifies 2M/MTR certification levels, required training, and job classification codes.

Table 1-1. 2M/MTR Personnel Requirements

CERTIFICATION LEVEL	TRAINING REQUIRED	NEC (USN)	PMOS / SMOS (USMC)	COMP CODE (USCG)
Miniature Technician (MN)	A-100-0072, Miniature Electronics Repair	9527	6423	2MRPR
Microminiature Technician (MC)	A-100-0073, Microminiature Electronics Repair *A-100-0072, Miniature Electronics Repair	9526	6423	2MMRPR
MTR Technician (MTR)	A-100-0076, Module Test & Repair Equipment Operator			
2M/MTR Technician (MC/MTR)	M09E2D1, Micro-Miniature Automated Test Equipment Technician Course, (Marine Corps ground) *A-100-0072, Miniature Electronics Repair *A-100-0073, Microminiature Electronics Repair *A-100-0076, MTR Equipment Operator	1591	8641	
2M Instructor (IN)	A-100-0074, 2M Instructor Pipeline *A-012-0011, Instructor Training *A-100-0072, Miniature Electronics Repair *A-100-0073, Microminiature Electronics Repair	9509 9502	6423	2MINST
MTR Instructor (IN/MTR)	Local Instructor Training Syllabus *A-012-0011, Instructor Training *A-100-0076, MTR Equipment Operator			
2M Technician Recertifier (RC)	A-100-0058, 2M Technician Recertifier *A-100-0072, Miniature Electronics Repair *A-100-0073, Microminiature Electronics Repair *A-100-0144, 2M Technician Recertifier Requalification	9503	6423	
2M/MTR Inspector (INS)	2M/MTR Inspector Job Qualification Requirement *A-100-0072, Miniature Electronics Repair *A-100-0073, Microminiature Electronics Repair *A-100-0076, MTR Equipment Operator *A-100-0058, 2M Technician Recertifier or *A-100-0144, 2M Technician Recertifier Requalification	9503		2MINST
2M/MTR Fleet Coordinator (FC)	Previous 9503 or 9509 2M/MTR Inspector Job Qualification Requirement *A-100-0072, Miniature Electronics Repair *A-100-0073, Microminiature Electronics Repair *A-100-0076, MTR Equipment Operator *A-100-0058, 2M Technician Recertifier or *A-100-0144, 2M Technician Recertifier Requalification	9503		
AMMT 2M Evaluator	**Previous 9503 or 9509			
2M Certification Agent (CA)	Appointed by 2M/MTR Program Manager Previous 2M fleet experience as a 9503 or 9509 *A-100-0073, Microminiature Electronics Repair *A-100-0072, Miniature Electronics Repair	9503 or 9509		
MTR Certification Agent (CA)	Appointed by 2M/MTR Program Manager *A-100-0076, MTR Equipment Operator			

* Prerequisite

** Recommended

1.4. PERSONNEL REPORTING. Table 1-1. *2M/MTR Personnel Requirements* is a summary of the reporting requirements for 2M/MTR Program personnel.

NOTE

2M Technician Recertifiers, 2M/MTR Inspectors, 2M/MTR Fleet Coordinators, 2M Instructors and MTR Instructors shall report completion of 2M/MTR personnel initial certification and recertification in the 2M/MTR database. Reporting shall be completed via the website located at <https://cert2m.crane.navy.mil>. For user access, contact the 2M Program Webmaster at DSN 482-1671. If computer access is not available 2M/MTR Personnel Certification Record (Appendix B) form will be utilized for mailing.

Table 1-2. 2M/MTR Personnel Reporting

CLASSIFICATION	COURSE COMPLETED	CERTIFICATION CARD	DOCUMENTATION BRANCH OF SERVICE
Miniature Electronic Repair Technician (MN)	A-100-0072	Appendix B (Green)	Appendix A (PIM) Page 13 2M/MTR database Direct Access USN USN All USCG
Microminiature Electronic Repair Technician (MC)	A-100-0073	Appendix B (Blue)	Appendix A (PIM) Page 13 2M/MTR database Direct Access USN USN All USCG
MTR Technician (MTR)	A-100-0076	Appendix B (Orange)	Appendix A (PIM) Page 13 2M/MTR database Direct Access USN USN All USCG
2M/MTR Technician (MC/MTR)	A-100-0076 A-100-0073 M09D2E1	Appendix B (Blue)	Page 13 2M/MTR database Direct Access USN USN USCG
2M Technician Recertifier (RC)	A-100-0058	Appendix B (Yellow)	Appendix A (PIM) 2M/MTR database Direct Access/ USN USN/USCG USCG
2M Instructor (IN)	A-100-0074 A-012-0011	Appendix B (White)	Appendix A (PIM) 2M/MTR database Direct Access USN All USCG

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2M/MTR PERSONNEL

2.1. MINIATURE ELECTRONIC REPAIR TECHNICIAN

2.1.1. Functions and Capabilities. Technicians certified as Miniature Electronic Repair Technicians are authorized to repair electrical and electronic enclosures, assemblies, subassemblies, and modules as follows:

- Wiring and soldering of terminals and connectors (wires AWG 26 and larger).
- Removal and replacement of discrete components and integrated circuits on single-sided and double-sided through-hole technology circuit card assemblies.
- Removal and replacement of conformal coatings on single-sided and double-sided through-hole technology circuit card assemblies.
- Removal and replacement of damaged pads and conductors on single-sided and double-sided through-hole technology circuit card assemblies.
- Removal and replacement of damaged laminate on single-sided and double-sided through-hole technology circuit card assemblies.
- Removal and replacement of flat packs.

2.1.2. Initial Requirements. To be eligible for training at the miniature level, technicians must be either assigned or en route to an activity requiring Miniature Electronic Repair Technicians. To receive initial certification, the technician must complete the Miniature Electronics Repair Course, A-100-0072, by demonstrating proficiency in performing the following tasks:

- Observe safety and ESD procedures.
- Identify the base laminate, the conformal coating, and the conformal coating removal methods on a minimum of three conformally coated circuit card assemblies.
- Remove silicone resin conformal coating from a minimum of two circuit card assemblies.
- Remove epoxy resin conformal coating from a minimum of two circuit card assemblies.
- Remove acrylic resin conformal coating from a minimum of two circuit card assemblies.
- Remove a minimum of two discrete components using the wicking desoldering method.
- Remove a minimum of two discrete components using the manual extraction desoldering method.
- Remove a minimum of two discrete components using the continuous vacuum extraction desoldering method.
- Prepare a minimum of one horizontal mount, axial leaded component for installation on a circuit card assembly.
- Prepare a minimum of one vertical mount, axial leaded component for installation on a circuit card assembly.
- Prepare a minimum of one horizontal mount, axial leaded component with stress relief bends for installation on a circuit card assembly.

- Prepare a minimum of one radial leaded component using dual 45° bends for installation on a circuit card assembly.
- Install a minimum of one horizontal mount, axial leaded component on both single-sided and double-sided circuit card assemblies using full clinch lead terminations.
- Install a minimum of one horizontal mount, axial leaded component with stress relief bends on both single-sided and double-sided circuit card assemblies using semi-clinch lead terminations.
- Install a minimum of one vertical mount, axial leaded component on a double-sided circuit card assembly using straight-through lead terminations.
- Install a minimum of one radial leaded component with dual 45° bends on a double-sided circuit card assembly using straight-through lead terminations.
- Excavate and straight wall a minimum of one surface patch laminate repair.
- Perform a minimum of one through-the-board patch laminate repair.
- Perform a minimum of one end of conductor (pad and conductor) repair.
- Perform a minimum of one conductor repair using the clinched staple method.
- Strip a minimum of two insulated wires using mechanical strippers.
- Strip a minimum of two insulated wires using thermal strippers.
- Strip and tin a minimum of one 18 gauge wire.
- Strip and tin a minimum of one 20 gauge wire.
- Strip and tin a minimum of one 22 gauge wire.
- Perform a minimum of one single-wire installation on a turret terminal.
- Perform a minimum of one two-wire installation on a turret terminal.
- Perform a minimum of one single-wire installation on a hook terminal.
- Perform a minimum of one two-wire installation on a hook terminal.
- Perform a minimum of two single-wire installations to solder cups.
- Remove a minimum of one dual in-line package from an uncoated circuit card assembly.
- Remove a minimum of one dual-in-line package from a conformally coated circuit card assembly.
- Remove a minimum of one flat pack from an uncoated circuit card assembly.
- Remove a minimum of one flat pack from a conformally coated circuit card assembly.
- Install a minimum of one dual-in-line package.
- Install a minimum of one flat pack.
- Complete a comprehensive miniature repair technique performance test.

2.1.2.1. Upon completion of the Miniature Electronics Repair Course, A-100-0072:

- The 2M Instructor will complete a Performance Information Memorandum [PIM] (Appendix A) in accordance with BUPERSINST 1610.10. The completed PIM is signed by the 2M/MTR site command representative and issued to the certifying Miniature Electronic Repair Technician for service record entry. For non-military personnel, the 2M/MTR training site will issue a certificate of completion in lieu of a PIM.

- The 2M Instructor will issue a serialized Miniature (*green*) Certification Card (Appendix B).
- The 2M Instructor will enter the certification information into the 2M/MTR database.
- Navy personnel are awarded Navy Enlisted Classification (NEC) 9527.
- Marine Corps (aviation) personnel are awarded Primary Military Occupational Specialty (PMOS) 6423.
- Coast Guard personnel are awarded Competency Code 2MRPR.

2.1.3. Recertification Requirements. A 2M Technician Recertifier, 2M/MTR Inspector, or 2M/MTR Fleet Coordinator shall recertify Miniature Electronic Repair Technicians every 18 months. Recertification should be completed before the current certification expires. To receive recertification, the technician must demonstrate proficiency by performing the tasks listed in the Miniature Recertification Performance Test (Appendix C).

NOTE

Recertifying technicians may use NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair to answer questions and perform procedures.

2.1.3.1. A technician will satisfactorily complete all required tasks within a two-day period. All projects must be completed with a score of 75 out of a possible 100. All projects will be graded using the following criteria:

- Acceptable conditions minus 5 points each.
- Process Indicator conditions minus 7.5 points each.
- Incorrect Acceptable or Process Indicator evaluations minus 2.5 points each.
- Projects with Defect conditions or scores less than 75 must be successfully retested.

2.1.3.2. Upon completion of the Miniature Recertification Performance Test:

- The recertifier will sign the performance test and issue it to the recertifying technician.
- The recertifier will complete NAVPERS 1070/613 [ADMINISTRATIVE REMARKS/ Page 13] (Appendix B) and issue it to the recertifying technician.
- The recertifier will issue a serialized Miniature (*green*) Certification Card (Appendix B) to the recertifying technician.
- The recertifier will enter the certification information into the 2M/MTR database.
- The technician shall maintain the completed performance test in their training record under the Qualification and Certification section.
- NAVAIR technicians shall forward the completed NAVPERS 1070/613 to the AIMD Officer or OIC for signature.
- All other Navy personnel shall submit the completed NAVPERS 1070/613 to their command administration department for service record entry.

2.1.3.3. If the technician cannot demonstrate the ability to complete the recertification tasks listed in Appendix C of this manual within the two-day period, the recertifier may allow up to an additional three days to complete satisfactorily all required tasks and provide remedial training. Remediation will consist of review of specifications, techniques used, and demonstrations on areas previously identified as unsatisfactory. If recertification is unsuccessful within a five-day period, the technician shall return to his or her activity to practice, rescheduling recertification with the recertifier for a later date.

2.1.3.4. Miniature Electronic Repair Technicians may be decertified during the recertification process. The recertifier will provide notification of inability to recertify at the miniature level to the technician's command. It is the command's responsibility to take appropriate action. For active duty Navy personnel, the technician's command shall recommend removal of NECs, and monitor the EDVR for applicable changes. Submission of NEC Change/Recommendation (EPMAC 1221/1) is required to remove an NEC. If a technician is denied certification and the EPMAC 1221/1 is not submitted, the EDVR may still show that technician as filling a 2M NEC requirement. A command manpower review and NEC realignment is recommended to account for those Miniature Electronic Repair Technicians no longer assigned NEC 9527 responsibilities due to changing job position or advancement.

NOTE

2M repairs to circuit card assemblies and electronic modules by Miniature Electronic Repair Technicians shall be limited to those specified in paragraph 2.1.1. Completed repairs shall meet the applicable workmanship standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair. Technicians identified as performing defective 2M repairs will be considered decertified and are required to schedule recertification with a 2M Technician Recertifier, 2M/MTR Inspector, or 2M/MTR Fleet Coordinator. The recertifier will provide remedial training in the areas identified as deficient. If remediation is unsuccessful, the recertifier will follow the reporting procedures described above.

2.2. MICROMINIATURE ELECTRONIC REPAIR TECHNICIAN

2.2.1. Functions and Capabilities. Technicians certified as Microminiature Electronic Repair Technicians are authorized to perform additional repair tasks beyond those of Miniature Electronic Repair Technicians. Authorized repairs for Microminiature Repair Technicians are as follows:

- All miniature electronic repair techniques and processes (paragraph 2.1.1 refers).
- Wiring and soldering of terminals and connectors (wires AWG 28 and smaller).
- Rework and repair of high-density component packaging.
- Removal and replacement of discrete components and integrated circuits on multilayer circuit card assemblies.
- Removal and replacement of damaged conductors and laminate on multilayer circuit card assemblies.
- Installation and rework of jumper wiring.
- Repair of flexible printed circuitry.
- Repair of edge-lighted (plastic) panels.
- Removal and replacement of components with welded leads.
- Removal and replacement of surface mount technology components.
- Removal and replacement of damaged laminate, lands, and conductors on surface mount technology circuit card assemblies.

2.2.2. Initial Requirements. To be eligible for training at the microminiature level, technicians must hold a current miniature certification and be either assigned or en route to an activity requiring Microminiature Electronic Repair Technicians. To receive initial certification, the technician must complete the Microminiature Electronics Repair Course, A-100-0073, by demonstrating proficiency in performing the following tasks:

- Observe safety and ESD procedures.
- Perform a minimum of one flexible printed circuitry repair.
- Perform a minimum of one multilayer circuit card assembly repair.
- Remove and replace a minimum of one bulb from a plastic panel assembly.
- Install and remove a minimum of three surface mount resistors.
- Install and remove a minimum of three surface mount capacitors.
- Install and remove a minimum of three metal electrode face (MELF) components.
- Install and remove a minimum of two small outline transistors (SOTs).
- Install and remove a minimum of two small outline integrated circuits (SOICs).
- Install and remove a minimum of two plastic quad flat packs (PQFPs).
- Install and remove a minimum of two plastic leaded chip carriers (PLCCs).

2.2.2.1. Upon completion of the Microminiature Electronics Repair Course, A-100-0073:

- The 2M Instructor will complete a PIM (Appendix A) in accordance with BUPERSINST 1610.10. The completed PIM is signed by the 2M/MTR site command representative and issued to the certifying Microminiature Electronic Repair Technician for service record entry. For non-military personnel, the 2M/MTR site will issue a certificate of completion in lieu of a PIM.
- The 2M Instructor will issue a serialized Microminiature (*blue*) Certification Card (Appendix B).
- The 2M Instructor will enter the certification information into the 2M/MTR database.
- Navy personnel are awarded NEC 9526.
- Marine Corps (aviation) personnel have microminiature certification added to PMOS 6423 qualifications.
- Coast Guard personnel are awarded Competency Code 2MMRPR.

2.2.3. Recertification Requirements. A 2M Technician Recertifier, 2M/MTR Inspector, or 2M/MTR Fleet Coordinator shall recertify Microminiature Electronic Repair Technicians every 18 months. Recertification should be completed before the current certification expires. To receive recertification, the technician must demonstrate proficiency by performing the tasks listed in the Microminiature Recertification Performance Test (Appendix D).

NOTE

Recertifying technicians may use NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair to answer questions and perform procedures.

2.2.3.1. A technician will satisfactorily complete all required tasks within a two-day period. Each project listed above must be completed with a score of 75 out of a possible 100. All projects will be graded using the following criteria:

- Acceptable conditions minus 5 points each.
- Process Indicator conditions minus 7.5 points each.
- Incorrect Acceptable or Process Indicator evaluations minus 2.5 points each.
- Projects with Defect conditions or scores less than 75 must be successfully retested.

2.2.3.2. Upon completion of the Microminiature Recertification Performance Test:

- The recertifier will sign the performance test and issue it to the recertifying technician.
- The recertifier will complete NAVPERS 1070/613 [ADMINISTRATIVE REMARKS/ Page 13] (Appendix B) and issue it to the recertifying technician.
- The recertifier will issue a serialized Microminiature (*blue*) Certification Card (Appendix B) to the recertifying technician.
- The recertifier will enter the certification information into the 2M/MTR database.
- The technician shall maintain the completed performance test in their training record under the Qualification and Certification section.
- NAVAIR technicians shall forward the completed NAVPERS 1070/613, to the AIMD Officer or OIC for signature.
- All other Navy personnel shall submit the completed NAVPERS 1070/613 to their command administration department for service record entry.

2.2.3.3. If the technician cannot demonstrate the ability to complete the recertification tasks listed in Appendix D of this manual within the two-day period, the recertifier may allow up to an additional three days to complete satisfactorily all required tasks and provide remedial training. Remediation will consist of review of specifications, techniques used, and demonstrations on areas previously identified as unsatisfactory. If recertification is unsuccessful within a five-day period, the technician shall return to his or her activity to practice, rescheduling recertification with the recertifier for a later date.

2.2.3.4. Microminiature Electronic Repair Technicians may be decertified during the recertification process. The recertifier will provide notification of inability to recertify at the microminiature level to the technician's command. It is the command's responsibility to take appropriate action. For active duty Navy personnel, the technician's command shall recommend removal of NECs, and monitor the EDVR for applicable changes. Submission of NEC Change/Recommendation (EPMAC 1221/1) is required to remove an NEC. If a technician is denied certification and the EPMAC 1221/1 is not submitted, the EDVR may still show that technician as filling a 2M NEC requirement. A command manpower review and NEC realignment is recommended to account for those Microminiature Electronic Repair Technicians no longer assigned NEC 9526 responsibilities due to changing job position or advancement.

NOTE

2M repairs to circuit card assemblies and electronic modules by Microminiature Electronic Repair Technicians shall be limited to those specified in paragraph 2.2.1. Completed repairs shall meet the applicable workmanship standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair. Technicians identified as performing defective 2M repairs will be considered decertified and are required to schedule recertification with a 2M Technician Recertifier, 2M/MTR Inspector, or 2M/MTR Fleet Coordinator. The recertifier will provide remedial training in the areas identified as deficient. If remediation is unsuccessful, the recertifier will follow the reporting procedures described above.

2.3. MTR TECHNICIAN

2.3.1. Functions and Capabilities. Technicians certified as MTR Technicians are authorized to test circuit card assemblies and electronic modules using the MTR test station.

2.3.2. Initial Requirements. To be eligible for MTR training, technicians must be either assigned or en route to an activity requiring MTR Technicians. To receive initial certification, the technician must complete the Module Test and Repair Equipment Operator Course, A-100-0076, by demonstrating proficiency in performing the following tasks:

- Observe safety and ESD procedures.
- Demonstrate ability to verify that current software is loaded on the Controller.
- Demonstrate the ability to configure the hardware settings in the MTR test station.
- Load Databases into the MTR Dispatcher.
- Download a Gold Disk Higher Assembly using the MTR Dispatcher.
- Troubleshoot a faulted circuit card assembly and identify the faulty component.
- Complete MTRTS Maintenance Action documentation on a faulted circuit card assembly.
- Complete MTRTS Maintenance Actions with Instructor provided scenarios.
- Provide a MTRTS Backup file for submission.

2.3.2.1. Upon completion of Module Test and Repair Equipment Operator Course, A-100-0076:

- The MTR Instructor will complete a PIM (Appendix A) in accordance with BUPERSINST 1610.10. The completed PIM is signed by the MTR training site command representative and issued to the MTR Technician for service record entry. For non-military personnel, the MTR training site will issue a certificate of completion in lieu of a PIM.
- The MTR Instructor will issue a serialized MTR (*orange*) Certification Card (Appendix B).
- The MTR Instructor will enter the certification information into the 2M/MTR database.

2.3.3. Recertification Requirements. A 2M/MTR Inspector or 2M/MTR Fleet Coordinator shall recertify MTR Technicians every 18 months. Recertification should be completed before the current certification expires. To receive recertification, the technician must demonstrate proficiency by performing the tasks listed in the MTR Recertification Performance Test (Appendix E).

2.3.3.1. A technician will satisfactorily complete all required tasks within a one-day period.

2.3.3.2. Upon completion of the MTR Recertification Performance Test:

- The recertifier will sign the performance test and issue it to the recertifying technician.
- The recertifier will complete NAVPERS 1070/613 [ADMINISTRATIVE REMARKS/ Page 13] (Appendix B) and issue it to the recertifying technician.
- The recertifier will issue a serialized MTR (*orange*) Certification Card (Appendix B) to the recertifying technician.
- The recertifier will enter the certification information into the 2M/MTR database.
- The technician shall maintain the completed performance test in their training record under the Qualification and Certification section.
- NAVAIR technicians shall forward the completed NAVPERS 1070/613, to the AIMD Officer or OIC for signature.
- All other Navy personnel shall submit the completed NAVPERS 1070/613 to their command administration department for service record entry.

2.3.3.3. If the technician cannot demonstrate the ability to complete the recertification tasks listed in Appendix E of this manual within the one-day period, the recertifier may allow an additional day to complete satisfactorily all required tasks and provide remedial training if necessary. Remediation will consist of review of specifications, techniques used, and demonstrations on areas previously identified as unsatisfactory. If recertification is unsuccessful within a two-day period, the technician shall return to his or her activity to practice, rescheduling recertification with the recertifier for a later date.

2.3.3.4. The MTR Technician may be decertified during the recertification process. The recertifier will provide notification of inability to recertify to the technician's command.

2.4. 2M/MTR TECHNICIAN

2.4.1. Functions and Capabilities. Technicians certified as 2M/MTR Technicians are authorized to perform all the tasks required of a Microminiature Electronic Repair Technician and of an MTR Technician (paragraphs 2.2.1 and 2.3.1 refer).

2.4.2. Initial Requirements. To be eligible for designation as a 2M/MTR Technician, technicians must be either assigned or en route to an activity requiring 2M/MTR Technicians.

2.4.2.1. Upon completion of the Miniature Electronics Repair Course, A-100-0072, the Microminiature Electronics Repair Course, A-100-0073, and the Module Test and Repair Equipment Operator Course, A-100-0076, Navy 2M/MTR Technicians are awarded NEC 1591 with the submission of Form NAVPERS 1221/6 Navy Enlisted Classification Change Request.

2.4.2.2. Upon completion of Micro-Miniature Automated Test Equipment Technician Course, M09D2E1, Marine Corps (ground) personnel are awarded SMOS 8641.

2.4.3. Recertification Requirements. A 2M/MTR Inspector or 2M/MTR Fleet Coordinator shall recertify 2M/MTR Technicians every 18 months at the Microminiature and MTR levels. Microminiature and MTR recertifications should be completed before the current certification expires. To receive recertification, the technician must demonstrate proficiency by performing the tasks listed in the Microminiature Recertification Performance Test and the MTR Recertification Performance Test as outlined in paragraphs 2.2.3 and 2.3.3.

2.4.3.1. Upon completion of the Microminiature and MTR Recertification Performance Tests the recertifier will follow the reporting procedures of paragraphs 2.2.3.2 and 2.3.3.2.

2.4.3.2. If the technician cannot demonstrate the ability to complete the recertification tasks listed in Appendices D and E of this manual, the remediation procedures outlined in paragraphs 2.2.3.3 and/or 2.3.3.3 apply.

2.4.3.3. 2M/MTR Technicians may be decertified during the recertification process. The recertifier will follow the notification procedures outlined in paragraphs 2.2.3.4 and/or 2.3.3.4.

2.5. 2M INSTRUCTOR

2.5.1.1. Functions and Capabilities. Technicians certified as 2M Instructors are authorized to conduct the Miniature Electronics Repair Course, A-100-0072, the Microminiature Electronics Repair Course, A-100-0073, the 2M Technician Recertifier Course, A-100-0058, the 2M Technician Recertifier Requalification Course, A-100-0144, and the 2M Instructor Pipeline Course, A-100-0074. 2M Instructors are capable of performing all tasks required of Miniature Technicians, Microminiature Technicians, and 2M Technician Recertifiers (paragraphs 2.1.1, 2.2.1, and 2.7.1 refer).

2.5.2. Initial Requirements. To be eligible for training at the 2M Instructor level, technicians must hold a current microminiature certification and be either assigned or en route to an activity requiring 2M Instructors. To receive initial certification, the technician must complete the 2M Instructor Pipeline Course, A-100-0074, by demonstrating proficiency in performing the following tasks:

- Observe safety and ESD procedures.
- Complete the Journeyman Instructor Training Course, A-012-0011 (Navy and Marine Corps [aviation] personnel).
- Complete a project example (to a graded standard of 85) for each graded step of each lesson topic of both the Miniature Electronic Repair Course, A-100-0072, and the Microminiature Electronic Repair Course, A-100-0073 (99 total projects).
- Satisfactorily demonstrate grading ability for each graded step of each lesson topic of both the Miniature Electronic Repair Course, A-100-0072, and the Microminiature Electronic Repair Course, A-100-0073 (99 total projects).
- Personalize their Instructor Guide and demonstration cards, and review the PowerPoint slides while observing a qualified 2M Instructor instruct each lesson topic and each demonstration in both the Miniature Electronic Repair Course, A-100-0072, and the Microminiature Electronic Repair Course, A-100-0073 (43 total lessons and demonstrations).
- Satisfactorily instruct each lesson topic and each demonstration in both the Miniature Electronic Repair Course, A-100-0072, and the Microminiature Electronic Repair Course, A-100-0073 (43 total lessons and demonstrations).

2.5.2.1. Upon completion of the 2M Instructor Pipeline Course, A-100-0074:

- The 2M Instructor will complete a PIM (Appendix A) in accordance with BUPERSINST 1610.10. The completed PIM is signed by the 2M/MTR site command representative and issued to the certifying 2M Instructor for service record entry. For non-military personnel, the 2M/MTR site will issue a certificate of completion in lieu of a PIM.
- The 2M Instructor will issue a serialized Instructor (*white*) Certification Card (Appendix B).
- The 2M Instructor enter the certification information into the 2M/MTR database.
- Navy personnel are awarded NEC 9509.
- Marine Corps (aviation) personnel have 2M Instructor certification added to PMOS 6423 qualifications.

- Coast Guard personnel are awarded a Competency Code 2MINST.

2.5.3. Recertification Requirements. A 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or 2M Certification Agent shall recertify 2M Instructors every 18 months at the microminiature level. Recertification should be completed before the current certification expires. To receive recertification at the microminiature level, the 2M Instructor must demonstrate proficiency by performing the Microminiature Recertification Performance Test as outlined in paragraph 2.2.3.

NOTE

If microminiature certification is not maintained, the 2M Instructor is not qualified to conduct initial 2M training or recertification of 2M technician skills.

2.5.3.1. Upon completion of the Microminiature Performance Test, the recertifier will follow the reporting procedures of paragraph 2.2.3.2. If the instructor cannot demonstrate the ability to complete the recertification tasks listed in Appendix D of this manual, the remediation procedures outlined in paragraph 2.2.3.3 apply.

2.5.3.2. The 2M Instructor's ability to conduct the Miniature Electronics Repair Course, A-100-0072, the Microminiature Electronics Repair Course, A-100-0073, the 2M Technician Recertifier Course, A-100-0058, the 2M Technician Recertifier Requalification Course, A-100-0144, and the 2M Instructor Pipeline Course, A-100-0074, shall be certified by the 2M Certification Agent in conjunction with the 2M/MTR Training Site Certification every 12 months. Primarily, the visit by the 2M Certification Agent will review, advise, and assist 2M Instructor personnel in matters concerning 2M training, organization, and administration, as applicable. The following items will be certified by the 2M Certification Agent:

- 2M Instructors have active platform exposure as a primary or secondary instructor in at least one complete Miniature Electronics Repair Course, A-100-0072 and one Microminiature Electronics Repair Course, A-100-0073, in the six months preceding the recertification.
- 2M Instructor training records, along with copies of evaluations, will be made available to the 2M Certification Agent during the site certification.
- 2M Instructors must receive at least two evaluations per year, which evaluate the 2M Instructor's technical expertise. Instructor evaluators who are certified 2M Instructors shall conduct these evaluations. At a minimum, one evaluation will be a demonstration of 2M repair techniques with both evaluations having a satisfactory grade. Evaluations will be recorded on the appropriate Instructor Evaluation Form and maintained in each 2M Instructor's training record.
- 2M Instructors performing a lecture or demonstration from the Miniature Electronics Repair Course, A-100-0072 or the Microminiature Electronics Repair Course, A-100-0073, shall ensure that the current curriculum material, tools, equipment, safety, repair techniques, and soldering procedures are presented.

NOTE

A certified 2M Instructor, Master Training Specialist (MTS) (if available), and the 2M Certification Agent will perform 2M Instructor evaluations during the 2M/MTR Training Site Certification.

- The 2M Certification Agent will observe the evaluating 2M Instructor and MTS debrief the recertifying 2M Instructor's lecture or demonstration. If required, the evaluating 2M Instructor and MTS will provide remedial training to the observed 2M Instructor to improve areas identified as deficient.

2.5.3.3. The 2M Certification Agent shall document Instructor recertification using the 2M/MTR Training Site Certification (Appendix H), shall issue each recertified instructor a serialized Instructor (*white*) Certification Card (Appendix B), and shall enter the certification information in the 2M/MTR database. The recertification results shall be submitted to the command representative (Commanding Officer, OIC, or Department Head), with a copy to the 2M/MTR Program Manager.

2.5.3.4. 2M Instructors may be decertified during the recertification process by failing to meet any of the criteria listed in section 2.5.3. The 2M Certification Agent will provide notification of inability to recertify to the instructor's command. It is the command's responsibility to take appropriate action. For active duty Navy personnel, the instructor's command shall recommend removal of NECs and monitor the EDVR for applicable changes. Submission of NEC Change/Recommendation (EPMAC 1221/1) is required to remove an NEC. If an instructor is denied certification and the EPMAC 1221/1 is not submitted, the EDVR may still show that instructor as filling a 2M NEC requirement. A command manpower review and NEC realignment is recommended to account for those 2M Instructors no longer assigned NEC 9509 responsibilities due to changing job position or advancement.

2.5.4. Previously Qualified 2M Instructor Requirements. A previously qualified 2M Instructor returning to an instructor billet is required to complete a locally generated Job Qualification Requirements (JQR) at the 2M/MTR training site. The JQR will include personalizing lesson plans and completing acceptable projects (graded steps) for a minimum of one lecture and two demonstrations in the Miniature Electronic Repair Course, A-100-0072, and the Microminiature Electronics Repair Course, A-100-0073. After the lesson plans are personalized and acceptable projects (graded steps) are completed, the previously qualified 2M Instructor will be required to teach these same lectures and demonstrations. The previously qualified 2M Instructor shall also complete the microminiature recertification requirements identified in paragraph 2.2.3. The recertifier will follow the microminiature reporting requirements provided in the same paragraph. Final recertification will be granted when the trainee has satisfactorily completed these requirements. The recertifier will enter the certification information into the 2M/MTR database.

2.6. MTR INSTRUCTOR

2.6.1. Functions and Capabilities. Technicians certified as MTR Instructors are authorized to conduct the Module Test and Repair Equipment Operator Course, A-100-0076. MTR Instructors are capable of performing all tasks required of MTR Technicians (paragraph 2.3.1 refers).

2.6.2. Initial Requirements. To be eligible for training at the MTR Instructor level, technicians must be either assigned or en route to an activity requiring MTR Instructors. To receive initial certification, the technician must demonstrate proficiency in performing the following tasks:

- Observe safety and ESD procedures.
- Complete the Journeyman Instructor Training Course, A-012-0011 (Navy and Marine Corps [aviation] personnel).
- Complete the Module Test and Repair Equipment Operator Course, A-100-0076.
- Complete the Gold Disk Developer Course.
- Personalize their Instructor Guide and review the PowerPoint slides while observing a qualified MTR Instructor instruct each lesson topic and each lab of the Module Test and Repair Equipment Operator Course, A-100-0076.
- Satisfactorily instruct each lesson topic and each demonstration in the Module Test and Repair Equipment Operator Course, A-100-0076.

2.6.3. Recertification Requirements. A 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or MTR Certification Agent shall recertify MTR Instructors every 18 months at the MTR level. Recertification should be completed before the current certification expires. To receive recertification at the MTR level, the MTR Instructor must demonstrate proficiency by performing the MTR Recertification Performance Test as outlined in paragraph 2.3.3.

NOTE

If MTR certification is not maintained, the MTR Instructor is not qualified to conduct initial MTR training.

2.6.3.1. Upon completion of the MTR Recertification Performance Test, the recertifier will follow the reporting procedures of paragraph 2.3.3.2. If the instructor cannot demonstrate the ability to complete the recertification tasks listed in Appendix E, the remediation procedures outlined in paragraph 2.3.3.3 apply.

2.6.3.2. The MTR Instructor's ability to conduct formal training courses for the Module Test and Repair Equipment Operator Course, A-100-0076, shall be certified by the MTR Certification Agent in conjunction with the MTR Training Site Certification every 12 months. Primarily, the visit by the MTR Certification Agent will review, advise, and assist MTR Instructor personnel in matters concerning MTR training, organization, and administration, as applicable. The following items will be certified by the MTR Certification Agent:

- MTR Instructors have active platform exposure as a primary or secondary instructor in at least one complete A-100-0076 course in the six months preceding the certification.
- MTR Instructor training records, along with copies of evaluations, will be made available to the MTR Certification Agent during the site certification.
- MTR Instructors performing a lecture in the A-100-0076 course shall ensure that current curriculum material, tools, equipment, safety, and troubleshooting techniques procedures are presented.

2.6.3.3. The MTR Certification Agent shall document the certification process using 2M/MTR Training Site Certification (Appendix H). The certification results shall be submitted to the command representative (Commanding Officer, OIC, or Department Head), with a copy to the 2M/MTR Program Manager.

2.6.3.4. MTR Instructors may be decertified during the recertification process by failing to meet any of the criteria listed in section 2.6.3. The MTR Certification Agent will provide notification of inability to recertify to the instructor's command.

2.7. 2M TECHNICIAN RECERTIFIER

2.7.1. Functions and Capabilities. Technicians certified as 2M Technician Recertifiers are authorized to perform recertification of Miniature and Microminiature Electronic Repair Technicians. 2M Technician Recertifiers are capable of performing all tasks required of Miniature Technicians and Microminiature Technicians (paragraphs 2.1.1 and 2.2.1 refer).

2.7.2. Initial Requirements. To be eligible for training at the 2M Technician Recertifier level, technicians must hold a current microminiature certification and be either assigned or en route to an activity requiring 2M Technician Recertifiers. To receive initial certification, the technician must complete the 2M Technician Recertifier Course, A-100-0058, by demonstrating proficiency in performing the following tasks:

- Observe safety and ESD procedures.
- Perform an end of conductor repair and satisfactorily evaluate each step of the repair.

- Install a single wire on a turret or hook terminal and satisfactorily evaluate each step of the installation.
- Install two wires on a turret or hook terminal and satisfactorily evaluate each step of the installation.
- Install a single wire in a solder cup and satisfactorily evaluate each step of the installation.
- Remove and install a horizontal mount, axial leaded component using full clinch terminations on a double-sided circuit card assembly and satisfactorily evaluate each step of the installation and removal.
- Remove and install a dual in-line package (DIP) and satisfactorily evaluate each step of the removal and installation.
- Perform the excavation and removal of two conductor layers of a multilayer circuit card assembly, install a replacement conductor on the second level of the multilayer excavation, and satisfactorily evaluate the each step of the excavation, removal, and installation.
- Perform excavation, bulb removal, and bulb installation on a plastic panel assembly and satisfactorily evaluate each step of the excavation, bulb removal, and bulb installation.
- Install and remove a surface mount resistor, capacitor, or metal electrode leadless face (MELF) component and satisfactorily evaluate each step of the installation and removal.
- Install and remove a small outline transistor (SOT) or small outline integrated circuit (SOIC) and satisfactorily evaluate each step of the installation and removal.
- Install and remove a plastic leaded chip carrier (PLCC) or plastic quad flat pack (PQFP) and satisfactorily evaluate each step of the installation and removal.

2.7.2.1. Upon completion of 2M Technician Recertifier Course, A-100-0058:

- The 2M Instructor will complete a PIM (Appendix A) in accordance with BUPERSINST 1610.10. The completed PIM is signed by the 2M/MTR site command representative and issued to the certifying 2M Technician Recertifier for service record entry. For non-military personnel, the 2M/MTR site will issue a certificate of completion in lieu of a PIM.
- The 2M Instructor will issue a serialized 2M Technician Recertifier (*yellow*) Certification Card (Appendix B).
- The 2M Instructor will enter the certification information into the 2M/MTR database.
- Navy personnel are awarded NEC 9503.
- Marine Corps (aviation) personnel have 2M Technician Recertifier certification added to PMOS 6423 qualifications.
- Coast Guard personnel are awarded Competency Code 2MINST.

2.7.3. Recertification Requirements. 2M Technician Recertifiers shall be recertified every 18 months by completion of the 2M Technician Recertifier Requalification Course, A-100-0144. The A-100-0144 course should be completed before the current certification expires.

2.7.3.1. Upon completion of 2M Technician Recertifier Recertification Course, A-100-0144:

- The 2M Instructor will complete a PIM (Appendix A) in accordance with BUPERSINST 1610.10. The completed PIM is signed by the 2M/MTR site command representative and issued to the recertifying recertifier for service record entry. For non-military personnel, the 2M/MTR site will issue a certificate of completion in lieu of a PIM.

- The 2M Instructor will issue a serialized 2M Technician Recertifier (*yellow*) Certification Card (Appendix B) to the recertifying recertifier.
- The 2M Instructor will enter the certification information into the 2M/MTR database.
- The 2M Technician Recertifier shall maintain the completed performance test in their training record under the Qualification and Certification section.
- NAVAIR 2M Technician Recertifiers shall forward the completed NAVPERS 1070/613 to the AIMD Officer or OIC for signature.
- All other Navy personnel shall submit the completed NAVPERS 1070/613 to their command administration department for service record entry.

2.7.3.2. If a 2M/MTR training site is not local, the 2M Technician Recertifier may be recertified by a 2M/MTR Inspector or a 2M/MTR Fleet Coordinator, in lieu of attending the A-100-0144 course, by performing the Microminiature Recertification Performance Test as outlined in paragraph 2.2.3, following the reporting procedures of paragraph 2.2.3.2.

2.7.3.3. 2M Technician Recertifiers may be decertified during the recertification process. The recertifier will provide notification of inability to recertify to the technician recertifier's command. It is the command's responsibility to take appropriate action. For active duty Navy personnel, the technician recertifier's command shall recommend removal of NECs and monitor the EDVR for applicable changes. Submission of NEC Change/Recommendation (EPMAC 1221/1) is required to remove an NEC. If a technician recertifier is denied certification and the EPMAC 1221/1 is not submitted, the EDVR may still show that instructor as filling a 2M NEC requirement. A command manpower review and NEC realignment is recommended to account for those 2M Technician Recertifiers no longer assigned NEC 9503 responsibilities due to changing job position or advancement.

2.8. 2M/MTR INSPECTOR

2.8.1. Functions and Capabilities. Technicians certified as 2M/MTR Inspectors are authorized to perform 2M/MTR site certifications, perform 2M and MTR Technician recertifications, and to evaluate, advise, and assist local 2M and MTR technicians. 2M/MTR Inspectors are experienced certified 2M Technician Recertifiers and/or 2M Instructors (paragraphs 2.5.1 and 2.7.1 refer).

2.8.2. Initial Requirements. To become a 2M/MTR Inspector, personnel must have completed a previous tour as a certified 2M/MTR Technician and/or 2M Instructor and be either assigned or en route to an activity requiring 2M/MTR Inspectors. To receive initial certification, the technician must demonstrate proficiency in performing the following tasks:

- Observe safety and ESD procedures.
- Complete the Module Test and Repair Equipment Operator Course, A-100-0076.
- Complete the 2M Technician Recertifier Course, A-100-0058, or the 2M Technician Recertifier Requalification Course, A-100-0144, as appropriate.
- Complete the 2M/MTR Inspector Job Qualification Requirement (JQR) (Appendix J) under the instruction of a currently certified 2M/MTR Inspector or 2M/MTR Fleet Coordinator.
- Satisfactorily perform 2M and MTR Technician recertifications, 2M/MTR Site certifications and 2M/MTR Personnel and Site reporting procedures under the instruction of a currently certified 2M/MTR Inspector or 2M/MTR Fleet Coordinator.

2.8.2.1. Upon completion of the initial requirements, 2M/MTR Inspector's command will forward a list of qualifications and the completed JQR to the 2M/MTR Fleet Coordinator.

2.8.3. Recertification Requirements. The 2M/MTR Fleet Coordinator will recertify the 2M/MTR Inspectors every 18 months as part of the 2M/MTR Certifying Sites Certification process as outlined in paragraph 3.3.1. To be recertified, 2M/MTR Inspectors shall complete the 2M Technician Recertifier Qualification Courses, A-100-0144 as outlined in paragraph 2.7.3. The A-100-0144 course should be completed before the current certification expires. Upon completion of A-100-0144 the 2M Instructor will follow the reporting requirements provided in paragraph 2.7.3.1.

NOTE

If 2M Technician Recertifier certification is not maintained, the 2M/MTR Inspector is not qualified to conduct recertification of 2M Technician skills or perform 2M/MTR site certifications.

2.8.3.1. 2M/MTR Inspector shall every 18 months complete MTR recertification administered by an MTR Instructor. Recertification should be completed before the current certification expires. To receive recertification, the inspector must demonstrate proficiency by performing the tasks listed in the MTR Recertification Performance Test as outlined in paragraph 2.3.3. Upon completion of the MTR Recertification Performance Test, the MTR Instructor will follow the reporting procedures as outlined in paragraph 2.3.3.2.

2.8.3.2. The 2M/MTR Fleet Coordinator shall accompany and observe the 2M/MTR Inspector during a 2M/MTR site certification. The 2M/MTR Fleet Coordinator certifies that the 2M/MTR Inspector as qualified to conduct 2M/MTR site certifications. The 2M/MTR Fleet Coordinator shall document the certification process using the 2M/MTR Certifying Site Certification (Appendix I) The certification results shall be submitted to the command representative (Commanding Officer, OIC, or Department Head), with a copy to the 2M/MTR Program Manager.

2.8.3.3. 2M/MTR Inspectors may be decertified during the certification process by failing to meet any of the criteria listed in this section. The 2M/MTR Fleet Coordinator will provide notification of inability to recertify to the inspector's command. It is the command's responsibility to take appropriate action. For active duty Navy personnel, the inspector's command shall recommend removal of NECs and monitor the EDVR for applicable changes. Submission of NEC Change/Recommendation (EPMAC 1221/1) is required to remove an NEC. If an inspector is denied certification and the EPMAC 1221/1 is not submitted, the EDVR may still show that instructor as filling a 2M NEC requirement. A command manpower review and NEC realignment is recommended to account for those 2M/MTR Inspectors no longer assigned NEC 9503 responsibilities due to changing job position or advancement.

2.9. 2M/MTR FLEET COORDINATOR

2.9.1. Functions and Capabilities. Technicians certified as 2M/MTR Fleet Coordinators are authorized to coordinate, schedule, and perform 2M/MTR Site certifications, perform 2M and MTR Technician recertifications, provide feedback concerning 2M/MTR Program matters, and manage 2M/MTR activities where 2M/MTR Inspectors are assigned. 2M/MTR Fleet Coordinators are experienced certified 2M Technician Recertifiers and/or former 2M Instructors (paragraphs 2.5.1 and 2.7.1 refer). 2M/MTR Fleet Coordinators are also authorized to perform recertification of 2M Technician Recertifiers and 2M/MTR Inspectors when recertification by attending the 2M Technician Recertifier Qualification Course, A-100-0144, is not locally available. 2M/MTR Fleet Coordinators are responsible to perform 2M/MTR Inspector functions at locations where 2M/MTR Inspectors are not assigned. The Mid-Atlantic Regional Maintenance Center and the Southwest Regional Maintenance Center will maintain technicians certified as 2M/MTR Fleet Coordinators.

2.9.2. Initial Requirements. Appointment of 2M/MTR Fleet Coordinators shall be coordinated with, and authorized by the 2M/MTR Program Manager (Appendix K). To become a 2M/MTR Fleet Coordinator, personnel must have completed a previous tour as a certified 2M Technician Recertifier and/or 2M Instructor, be either assigned or en route to a command requiring 2M/MTR Fleet Coordinators, and hold the rank of E-8, or above, or a General Schedule GS-12, or above. To receive initial certification, the technician must demonstrate proficiency in performing the following tasks:

- Observe safety and ESD procedures.
- Complete the Module Test and Repair Equipment Operator Course, A-100-0076.
- Complete the 2M Technician Recertifier Course, A-100-0058, or the 2M Technician Recertifier Requalification Course, A-100-0144, as appropriate.
- Complete the 2M/MTR Inspector JQR (Appendix J) under the instruction of a currently certified 2M/MTR Inspector or 2M/MTR Fleet Coordinator.
- Satisfactorily perform 2M and MTR Technician recertifications, 2M/MTR Site certifications and 2M/MTR Personnel and Site reporting procedures under the observation of both the 2M Certification Agent and MTR Certification Agent.

2.9.2.1. Upon completion of the initial requirements:

- The 2M Certification Agent will complete the 2M/MTR Fleet Coordinator Designation letter (Appendix K) and forward it to the 2M/MTR Program Manager via the MTR Certification Agent for signature and final designation.

2.9.3. Recertification Requirements. The 2M and MTR Certification Agents will recertify the 2M/MTR Fleet Coordinators every 12 months as part of the 2M/MTR Certifying Sites process as outlined in paragraph 3.3.1. The 2M/MTR Fleet Coordinators shall every 18 months complete the 2M Technician Recertifier Requalification Course, A-100-0144. The A-100-0144 course should be completed before the current certification expires. Upon completion of A-100-0144 the 2M Instructor will follow the reporting requirements provided in paragraph 2.7.3.1.

NOTE

If 2M Technician Recertifier certification is not maintained, the 2M/MTR Fleet Coordinator is not qualified to conduct recertification of 2M Technician skills or perform 2M/MTR site certifications.

2.9.3.1. 2M/MTR Fleet Coordinator shall every 18 months complete MTR recertification administered by an MTR Instructor. Recertification should be completed before the current certification expires. To receive recertification, the coordinator must demonstrate proficiency by performing the tasks listed in the MTR Recertification Performance Test as outlined in paragraph 2.3.3. Upon completion of the MTR Recertification Performance Test, the MTR Instructor will follow the reporting procedures as outlined in paragraph 2.3.3.2.

2.9.3.2. Every 12 months, the 2M and MTR Certification Agents shall review the certification status of the sites and inspectors under the 2M/MTR Fleet Coordinator's cognizance, and accompany and observe the 2M/MTR Fleet Coordinator during a 2M/MTR site certification. The 2M and MTR Certification Agents certify the 2M/MTR Fleet Coordinator as qualified to conduct 2M/MTR site certifications and as qualified to manage the fleet 2M/MTR program. The 2M and MTR Certification Agents shall document the process by completing the 2M/MTR Fleet Coordinator Designation (Appendix K) in accordance with paragraph 2.9.2.1.

2.9.3.3. 2M/MTR Fleet Coordinators may be decertified during the certification process by failing to meet any of the criteria listed in this section. The 2M and/or MTR Certification Agent will provide notification of inability to recertify to the coordinator's command and to the 2M/MTR Program Manager. It is the command's and the 2M/MTR Program Manager's responsibility to take appropriate action.

2.10. AVIATION MAINTENANCE MANAGEMENT TEAM (AMMT) 2M EVALUATOR

2.10.1. Functions and Capabilities. Technicians certified as AMMT 2M Evaluators are authorized to perform 2M/MTR site (aviation) certifications and to evaluate, advise, or assist Fleet Readiness Center (FRC) and Aircraft Intermediate Maintenance Department (AIMD) 2M Technician Recertifiers regarding 2M/MTR Program matters. AMMT 2M Evaluators are experienced Aviation Electronics Technicians (AT) or Aviation Electricians Mates (AE). It is strongly recommended that AMMT 2M Evaluators have experience as previously certified 2M Technician Recertifiers and/or 2M Instructors.

2.10.2. Initial Requirements. To become an AMMT 2M Evaluator, personnel must be either assigned or en route to an activity requiring AMMT 2M Evaluators. AMMT 2M Evaluators are also required to complete a Type Commander (TYCOM) specified training period where they accompany an experienced 2M Evaluator on AMMT visits prior to conducting visits alone.

2.10.3. Recertification Requirements. NAVSEA will certify AMMT 2M Evaluators every 12 months as part of the 2M/MTR Certifying Sites process as outlined in paragraph 3.3.1. NAVSEA may extend this interval up to 24 months to facilitate scheduling. Primarily, NAVSEA will advise or assist AMMT 2M Evaluators in matters concerning 2M/MTR Program management and administration, as applicable. This shall include ensuring the AMMT 2M Evaluator's activity has updated information on tool lists, facility certification and reporting procedures, and 2M/MTR Program updates. NAVSEA shall accompany and observe the AMMT 2M Evaluator during an AMMT visit. NAVSEA certifies the AMMT as qualified to conduct 2M/MTR site validations. NAVSEA shall document the certification process using 2M/MTR Certifying Site Certification (Appendix I). The certification results shall be submitted to the command representative (Commanding Officer, OIC, or Department Head), with a copy to NAVAIR 6.7.

2.11. 2M AND MTR CERTIFICATION AGENT

2.11.1. Functions and Capabilities. Personnel certified as 2M or MTR Certification Agents act on behalf of the Naval Sea Systems Command on matters relating to the 2M/MTR Program and the certification process. The 2M Certification Agent is authorized to perform certifications of 2M Instructors, AMMT 2M Evaluators, 2M/MTR recertifying sites, and the 2M portion of 2M/MTR Fleet Coordinator certifications. The MTR Certification Agent is authorized to perform certifications of MTR Instructors, MTR training sites, and the MTR portion of 2M/MTR Fleet Coordinator certifications. Certification Agents will advise or assist 2M/MTR Fleet Coordinators in matters concerning the 2M/MTR Program to ensure the 2M/MTR Fleet Coordinator's activity has updated information on tool lists, facility certification and reporting procedures, and 2M/MTR Program updates. In accordance with NAVSEAINST 4790.17, Naval Surface Warfare Center, Crane Division will act as the 2M Certification Agent and Naval Undersea Warfare Center Detachment, Field Engineering Office Norfolk will act as the MTR Certification Agent.

2.11.2. Initial Requirements. The 2M and MTR Certification Agents are appointed by the 2M/MTR Program Manager who will formally inform them that they are authorized to perform this function. (NAVSEAINST 4790.17 refers). Initial qualification requirements include the following:

- Observation of safety and ESD procedures.
- 2M: Prior 2M fleet experience as a certified 2M Technician Recertifier and/or 2M Instructor.
- 2M: Thorough knowledge of 2M soldering techniques and standards, ESD handling procedures, and surface mount technology to inspect satisfactorily 2M facilities and personnel for conformance to 2M/MTR Program requirements.

- MTR: Thorough knowledge of MTR troubleshooting techniques, system fault isolation skills, and operational software, ESD handling procedures to satisfactorily inspect MTR facilities and personnel for conformance to 2M/MTR Program requirements.
- Effective oral communication skills to provide demonstrations of new and established methods of test and repair.
- Effective written communication skills to incorporate new techniques into existing documentation, prepare reports, and make recommendations to appropriate command authorities.
- Have the capability of meeting and dealing effectively with a broad range of military and civilian personnel.

2.11.3. Recertification Requirements. The 2M/MTR Program Certification Agents qualifications are validated every 12 months by the 2M/MTR Program Manager. The 2M/MTR Program Manager will formally reaffirm this authorization through the annual tasking and funding process. Also, a 2M/MTR Fleet Coordinator shall recertify 2M Certification Agents every 18 months at the microminiature level. Recertification should be completed before the current certification expires. To receive recertification at the microminiature level, the 2M Certification Agent must demonstrate proficiency by performing the Microminiature Recertification Performance Test as outlined in paragraph 2.2.3.

2.11.3.1. Upon completion of the Microminiature Recertification Performance Test, the recertifier will follow the reporting procedures as outlined in paragraph 2.2.3.2.

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2M/MTR SITES

3.1. 2M/MTR REPAIR SITES

3.1.1. Initial Certification Requirements. Authority to diagnose, repair, and rework electronic assemblies will be granted only to those maintenance activities evaluated as being capable of providing quality 2M/MTR electronics diagnostic testing and repair. Activities performing organizational, intermediate, depot, or contractor (where 2M/MTR requirements are invoked in the contract) 2M/MTR maintenance on Navy procured electronic assemblies, regardless of physical location, will be certified by a 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator. A 2M/MTR site will be identified as capable of performing high quality diagnostic testing and repairs when minimum levels of certified personnel, equipment outfitting, and facility requirements are met. The 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator shall document the certification process using the 2M/MTR Repair Site Certification (Appendix G). The 2M/MTR Repair Site Certification letter must be signed by the either the Mid-Atlantic Regional Maintenance Center or the Southwest Regional Maintenance Center. The 2M/MTR site certification process consists of the following actions:

1. Identify activity (with UIC) being certified.
2. List date of the certification.
3. Identify certifying activity.
4. Conduct an arrival briefing with command representative [Commanding Officer (CO), Officer in Charge (OIC), Electronics Material Officer (EMO), Combat Systems Maintenance Officer (CSMO), AIMD Officer, Marine Aviation Logistics Squadron (MALs), Aviation Maintenance Officer (AMO), Department Head, or Division Director], and appropriate 2M/MTR personnel (2M Technician Recertifier, 2M/MTR workcenter supervisor, etc.).
5. Identify all assigned 2M/MTR personnel including name, rate, planned rotation date (PRD), workcenter, certification level, and certification expiration date.

NOTE

The 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator performing the certification should also assist the activity in reviewing applicable manning documents [Enlisted Distribution Verification Report (EDVR)] for personnel with 2M/MTR NEC, PMOS, SMOS or Competency Code who are out of certification to evaluate retention of the NEC, PMOS, SMOS or Competency Code.

6. Inventory and verify performance of the applicable 2M/MTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment noting differences with the current configuration:
 - 2M Electronic Rework Power Unit: MBT-250-SD Station, PRC-2000-Through Hole (TH), PRC-2000-Surface Mount Technology (SMT).
 - Auxiliary Equipment: Microscope, Fiber Optic Lamp, ESD Constant Monitoring Station, Preheater, etc.
 - MTR Equipment: MTR Test Station Controller, MTR Test Equipment, ESD Constant Monitoring Station, Uninterruptible Power Supply, and associated accessories.

b. Inventory consumables, tools, and support equipment using the 2M/MTR Workstation Checklist (Appendix F).

c. Verify applicable 2M/MTR equipment is operational per (Appendix L).

7. Discuss and evaluate proposed changes in tools, equipment, techniques, and 2M and MTR training curriculum.

8. Verify all support equipment used for 2M/MTR diagnostic testing and repair is supported by an approved allowance list (APL/AEL). Provide the technicians with information regarding approved changes to the allowance lists.

- NAVSEA AND COAST GUARD. The Coordinated Shipboard Allowance List (COSAL) or Coordinated Shore-Based Allowance List (COSBAL), PRC-2000-2M System Allowance Parts List (APL) 00032540, Portable 2M Kit (MBT-250-SD Station) 00041450, AN/USM-674(V) APL 00041165CL, and/or 2M/MTR Piece Parts and Augmented Piece Parts APL.
- NAVAIR. N/A for aviation activities. This validation is encompassed in the Aviation Consolidated Allowance List (AVCAL) or Shore-Based Consolidated Allowance List (SHORCAL) review process for aviation activities.
- MARCOR. Marine Corps Stocklist, Maintenance Kit, Electronic Equipment, Model MK-2663/U, SL-3-09458B, Marine Corps Stocklist, Tool Kit, Electronic (Portable 2M Kit), Model TD-8641, SL-3-11302A.

9. Verify all equipment used for 2M/MTR included into the activity's preventive maintenance program.

- NAVSEA AND COAST GUARD. Pace Soldering Station (PRC-2000, MBT-250 2M System and ESD Constant Monitoring) MRCs, MIP 6652/005, and/or AN/USM-674 MRCs, MIP 4911/003.
- NAVAIR. Technical Manual, Periodic Maintenance Requirements Manual, PACE Soldering Station, PACE Incorporated GLDA, NAVAIR 17-600-193-2.

10. Evaluate the site facility to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.

11. Verify that at least one paper or electronic copy of applicable 2M/MTR reference documents is available at or near the workstation. Multiple workstations in the same location do not require multiple copies of each document.

- NAVSEA AND COAST GUARD. NAVSEA SE004-AK-TRS-010/2M; NAVSEA S9665-CY-OMP-010/PRC-2000/U, and/or NAVSEA SE010-A7-MMC-010/MBT-250-SD/U; NAVSEA TE000-AA-MAN-010/2M.
- NAVAIR. NAVAIR 01-1A-23; NAVAIR 17-15-99; NAVAIR SE-004-PQS-000; and NAVAIR 17-600-193-6-2.
- MARCOR. MARINE CORPS TM 5895-45/1D, MARINE CORPS TM 09458A-14&P/1B

12. Verify that the 2M/MTR workcenter has all the materials required for ESD prevention and is following proper ESD procedures (mat, wrist straps, and static-shielded bags).

13. Verify 2M/MTR maintenance actions and piece parts usage is documented in accordance with established procedures. Ensure the Supply Department personnel are fully aware of the policies and procedures contained in COMFLTFORCOMINST 4790.3 (JFMM) and NAVSUP Publication 485, Afloat Supply Procedures. Measure the overall effectiveness of the 2M/MTR Program by comparing the command's requisition data to the MTRTS.

- NAVSEA AND COAST GUARD. Verify 2M repairs are documented in accordance with OPNAVINST 4790.4(series) Chapters 6 and 7, and Appendix A via OPNAV 4790/2K Ship's Maintenance Action Form (2-Kilo), Action Taken Code 7 (series). Also, verify the Module Test and Repair Tracking System (MTRTS) is being used in accordance with established procedures to document circuit card assembly screening and repair.
- NAVAIR. Refer to OPNAVINST 4790.2 (series), VOL III, paragraph 9.3.1b (4).

14. Summarize the certification:

a. **MAJOR DEFICIENCIES.** 2M/MTR deficiencies noted in the certification results may be minor or major and caused by missing, worn, or inoperable tools and equipment, a safety violation, or facility environmental deficiency. *A major deficiency impairs the capability to perform any specific task of a 2M repair or MTR fault isolation and is cause for failure of the 2M/MTR site certification.* Examples of major deficiencies include:

- Missing ESD control capabilities (e.g. missing or defective ESD mat or wrist strap).
- Any combination of missing tools or inoperable 2M/MTR equipment that would prevent completing some form of 2M repair, (missing several sizes of extractor tips, all flush and diagonal cutting pliers, etc.).
- Missing eye protection (missing both safety goggles and spectacles).
- 2M/MTR site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.
- A technician is unable to sit with their legs under the workbench to properly operate footswitches that are on the deck or on a permanently installed stable platform
- Insufficient quantity of individual power receptacles to support required 2M equipment and/or MTR equipment.
- Lack of minimum required certified 2M/MTR technicians.
- Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration.

b. **MINOR DEFICIENCIES.** *A minor deficiency does not impair the capability to perform 2M repair actions or MTR diagnostic operations.* Examples of 2M/MTR minor deficiencies include:

- Missing a single size of extractor tip, eyelet, or ball mill.
- ESD procedures not being properly followed.
- Missing MTR software revisions.
- Worn dip clips.

c. **GENERAL COMMENTS.** List any comments and/or information; especially note outstanding performance by personnel or the activity. List 2M/MTR screening, CASREPs averted, cost avoidance, and rate of effectiveness data.

- d. Provide any recommendations for the personnel or activity to improve.

15. Insert the overall results of the certification process in terms of [capable/incapable] per the criteria below:

a. **MINIATURE REPAIR CAPABILITY.** The 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator will identify a 2M repair site as miniature repair capable when an activity meets the requirements identified above and the following additional requirements:

- A minimum of one repair technician currently certified at the miniature level assigned to each miniature workstation. Two technicians per workstation are recommended.
- A minimum of 2M/MTR program approved equipment and tools required to perform quality miniature repairs as prescribed by 2M/MTR Workstation Checklist (Appendix F). Miniature repair stations outfitted with a PRC-2000 2M System shall include one 2M/MTR program approved operational microscope with light source and stand.
- A designated work area with adequate facilities, including ventilation, lighting, work area, and work surface as outlined in NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.

b. **MICROMINIATURE REPAIR CAPABILITY.** The 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator will identify a 2M repair site as microminiature repair capable when an activity meets the requirements identified above and the following additional requirements:

- A minimum of one repair technician currently certified at the microminiature level assigned to each microminiature workstation. Two technicians per workstation are recommended. A microminiature workstation may be certified at the miniature level if there is a shortage of Microminiature Electronic Repair Technicians, but there is a currently certified Miniature Electronic Repair Technician assigned to the workstation.
- A minimum of 2M/MTR program approved equipment and tools required to perform quality microminiature repairs as prescribed by 2M/MTR Workstation Checklist (Appendix F), including one 2M/MTR program approved operational microscope with light source and stand per workstation.
- A designated work area with adequate facilities, including ventilation, lighting, work area, and work surface as outlined in NAVAIR 01-1A-23, NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.

c. **MTR STATION CAPABILITY.** The 2M/MTR Inspector or 2M/MTR Fleet Coordinator will identify a MTR site capable of diagnostic testing when an activity meets the requirements identified above and the following additional requirements:

- A minimum of one certified MTR station operator assigned to each MTR workstation. Two station operators per workstation are recommended.
- A minimum of support equipment and accessories required to perform diagnostic testing as prescribed by 2M/MTR Workstation Checklist (Appendix F).

16. Conduct a departure briefing with a command representative (Commanding Officer, OIC, Supply Officer, EMO, CSMO, AIMD Officer, MALS AMO, Department Head, Division Director, or DLR Manager) and appropriate 2M/MTR personnel (2M Technician Recertifier, 2M/MTR workcenter supervisor, etc.). All discrepancies and recommendations for improvement shall be discussed and documented.

3.1.2. Recertification Requirements. A 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator will certify all 2M/MTR repair sites every 18 months. This interval may be extended to 24 months by the TYCOM (2M Liaison for the Coast Guard) to facilitate scheduling. 2M/MTR repair sites will be certified whenever 2M/MTR workstations are relocated to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements. 2M/MTR repair sites are identified as 2M repair and/or MTR capable when minimum levels of certified personnel, equipment outfitting, and facility requirements are met. The 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator shall document the certification process using the 2M/MTR Repair Site Certification (Appendix G). Certification results will be presented directly to the command representative. The 2M/MTR Inspector or 2M/MTR Fleet Coordinator shall be responsible for entering technician and workstation data into the 2M/MTR database.

3.2. 2M/MTR TRAINING SITES

3.2.1. Initial Certification Requirements. Certification of 2M/MTR training sites will be required for any activity teaching the Miniature Electronics Repair Course, A-100-0072, the Microminiature Electronics Repair Course, A-100-0073, the 2M Technician Recertifier Course, A-100-0058, the 2M Technician Recertifier Requalification Course, A-100-0144, the 2M Instructor Pipeline Course, A-100-0074 and/or the Module Test and Repair Equipment Operator Course, A-100-0076. Activities are certified by NAVSEA as qualified to instruct the aforementioned courses when they meet minimum manning levels of certified personnel, equipment outfitting and facility requirements. NAVSEA shall document the certification process using 2M/MTR Training Site Certification (Appendix H). The 2M/MTR training site certification process consists of the following actions:

1. Identify activity (with UIC) being certified.
2. List date of the certification.
3. Identify certifying activity.
4. Conduct an arrival briefing with a command representative (Commanding Officer, OIC, Department Head, or Division Director) and appropriate 2M/MTR personnel (2M/MTR Group/Course Supervisor or 2M and MTR Instructors).
5. Identify all assigned 2M and MTR instructor personnel including name, rate, planned rotation date (PRD), certification level, and certification expiration date.
6. Inventory and verify performance of the applicable 2M/MTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment noting differences with the current configuration:
 - 2M Electronic Rework Power Unit: MBT-250-SD Station, PRC-2000-Through Hole (TH), PRC-2000-Surface Mount Technology (SMT).
 - Auxiliary Equipment: Microscope, Fiber Optic Lamp, ESD Constant Monitoring Station, Preheater, etc.
 - MTR Equipment: MTR Test Station Controller, MTR Test Equipment, ESD Constant Monitoring Station, Uninterruptible Power Supply, and associated accessories.
 - b. Inventory consumables, tools, and support equipment using the 2M/MTR Workstation Checklist (Appendix F).
 - c. Verify applicable 2M/MTR equipment is operational per (Appendix L).

7. Discuss and evaluate proposed changes in tools, equipment, techniques, and 2M and MTR training curriculum.
8. Verify training site has an ample supply of course identified circuit cards (A-100-0072-001, A-100-0072-002, A-100-0073-001, A-100-0073-002), flex print (A-100-0073-003), laminate coupon (A-100-0072-003), terminals, eyelets, solder cups, components, consumables, etc. List discrepancies and projected corrective actions.
9. Evaluate the site facility to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.
10. Verify at least one paper or electronic copy of the following 2M/MTR documents are in the possession of the 2M Course Supervisor: OPNAVINST 4790.2 (series), VOL V, Chapter 23, OPNAVINST 4790.7 (series), OPNAVINST 4790.13 (series), NAVSEAINST 4790.17 (series), NAVSEA TE000-AA-MAN-010/2M, NAVAIR SE-004-PQS-000, appropriate 2M/MTR TYCOM instruction(s), and the current 2M NTP S-30-8711.
11. Verify appropriate instructional materials are current and available (administrator's guide, lesson plan, performance tests, testing plan, trainee guide, training course control document, and audiovisual aids) for the Miniature Electronics Repair Course, A-100-0072, the Microminiature Electronics Repair Course, A-100-0073, the 2M Instructor Pipeline Course, A-100-0074, and if applicable the 2M Technician Recertifier Course, A-100-0058, the 2M Technician Recertifier Requalification Course A-100-0144, and the Module Test and Repair Equipment Operator Course, A-100-0076. List discrepancies and projected corrective action anticipated.
12. Review the activity's training records. This will include a review of 2M and MTR Instructor training records, courses conducted, number of training quotas available and utilized, and the certification of students by skill level since last training site certification.
13. Verify each classroom meets applicable training capability per the following criteria:
 - a. **MINIATURE TRAINING CAPABILITY.** NAVSEA will identify a 2M/MTR training site as miniature training capable when the activity meets all the requirements cited above and the following additional requirements:
 - A minimum of four to one student/instructor laboratory ratio is required utilizing a minimum of one certified 2M Instructor per laboratory classroom with the balance of required instructors either certified 2M Instructors or Instructors in the 2M Instructor Pipeline Course.
 - Each classroom shall have a minimum of one complete set of equipment and tools per student and one additional set for 2M Instructor preparation and demonstrations, as prescribed by the Miniature Electronics Repair Course, A-100-0072, and using the 2M/MTR Workstation Checklist (Appendix F).
 - A minimum of one paper copy of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D per student and one paper or electronic copy of NAVSEA S9665-CY-OMP-010/PRC-2000U / NAVAIR 17-15-99 per classroom.
 - Each classroom meets the ventilation, lighting, work area, and work surface requirements, as outlined in NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.
 - One operational microscope with light source and stand per student.

- One operational Miniature/Microminiature Display Trainer (MMDT) consisting of closed circuit television camera, monitor, and microscope per classroom.

b. MICROMINIATURE TRAINING CAPABILITY. NAVSEA will identify a 2M/MTR training site as microminiature training capable when the activity meets all the requirements cited above, has a minimum of one complete set of equipment and tools per student, and has one additional set per classroom for 2M Instructor preparation and demonstrations, as prescribed by the Microminiature Electronics Repair Course, A-100-0073, and using the 2M/MTR Workstation Checklist (Appendix F).

c. MTR TRAINING CAPABILITY. NAVSEA will identify a 2M/MTR training site as MTR training capable when the activity meets all the requirements cited above and the following additional requirements:

- A minimum of six to one student/instructor ratio is required utilizing a minimum of one certified MTR Instructor per classroom.
- A minimum of one complete set of test equipment, tools and accessories per student and one additional set per classroom for MTR Instructor preparation and demonstrations, as prescribed by the MTR Equipment Operator Course, A-100-0076, and using the 2M/MTR Workstation Checklist (Appendix F).
- A minimum of one paper copy of NAVSEA ST900-HN-GPT-010 / AIR FORCE 33D7-38-308-8-11 / ARMY 11-6625-714-14&P / MARINE CORPS TM 10793A-10/1 Department of Defense Module Test and Repair Users Manual per student and one paper or electronic copy of NAVSEA ST821-AE-MMO-010 / MARINE CORPS TM 09810A-14 &P/3 / AIR FORCE 33D7-34-9-1 Department of Defense Huntron Tracker 2000 A/B Operation and Maintenance Manual per student.
- Each classroom meets the ventilation, lighting, work area, and work surface requirements, as outlined in NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.

14. Evaluate instructors to ensure technical and process fidelity in accordance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair.

15. Summarize the certification:

a. MAJOR DEFICIENCIES. 2M/MTR deficiencies noted in the certification results may be minor or major and caused by missing, worn, or inoperable tools and equipment, a safety violation, or facility environmental deficiency. *A major deficiency impairs the capability to perform any specific task of a 2M repair or MTR fault isolation and is cause for failure of the site certification.* Examples of major deficiencies include:

- Missing ESD control capabilities (e.g. missing or defective ESD mat or wrist strap).
- Any combination of missing tools or inoperable 2M/MTR equipment that would prevent completing some form of 2M repair, (missing several sizes of extractor tips, all flush and diagonal cutting pliers, etc.).
- Missing eye protection (missing both safety goggles and spectacles).
- 2M/MTR training site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.

- A student is unable to sit with their legs under the workbench to properly operate footswitches that are on the deck or on a permanently installed stable platform.
- Insufficient quantity of individual power receptacles to support required 2M equipment and/or MTR equipment.
- Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration.

b. **MINOR DEFICIENCIES.** *A minor deficiency does not impair the capability to perform 2M repair actions or MTR diagnostic operations.* Examples of 2M/MTR minor deficiencies include:

- Missing a single size of extractor tip, eyelet, or ball mill.
- ESD procedures not being properly followed.
- Missing MTR software revisions.
- Worn dip clips.

c. **GENERAL COMMENTS.** List any comments and/or information; especially note outstanding performance by personnel or the activity.

d. Provide any recommendations for the personnel or activity to improve.

16. Insert the overall results of the certification process in terms of [capable/incapable] of providing instruction leading to the accomplishment of Miniature Electronics Repair, Microminiature Electronics Repair, 2M Technician Recertifier, 2M Instructor, MTR Instructor, or Module Test and/or Repair Equipment Operator training.

17. Conduct a departure briefing with a command representative (Commanding Officer, OIC, Department Head, or Division Director) and appropriate 2M/MTR personnel (2M/MTR Group/Course Supervisor or 2M and MTR Instructors). All discrepancies and recommendations for improvement shall be discussed and documented.

3.2.2. Recertification Requirements. NAVSEA will certify all 2M/MTR training sites every 12 months. NAVSEA may extend this interval up to 18 months to facilitate scheduling. Activities are certified by NAVSEA as qualified to instruct the Miniature Electronics Repair Course, A-100-0072, the Microminiature Electronics Repair Course, A-100-0073, the 2M Technician Recertifier Course, A-100-0058, the 2M Technician Recertifier Requalification Course, A-100-0144, the 2M Instructor Pipeline Course, A-100-0074, and/or the Module Test and Repair Equipment Operator Course, A-100-0076, when they meet minimum manning levels of certified personnel, equipment outfitting and facility requirements. NAVSEA shall document the certification process using 2M/MTR Training Site Certification (Appendix H). The certification results shall be submitted to the command representative (Commanding Officer, OIC, or Department Head), with a copy to Center for Surface Combat Systems, Dahlgren, Center for Naval Aviation Technical Training, Pensacola. NAVSEA shall be responsible for entering 2M and MTR Instructor and 2M/MTR workstation data into the 2M/MTR database.

3.3. 2M/MTR CERTIFYING SITES

NOTE

2M/MTR Certifying Sites are provided equipment by NAVSEA for the purpose of technician recertification and remediation. 2M/MTR Certifying Sites and 2M/MTR Repair Sites will be separately maintained.

3.3.1. Initial Certification Requirements. Certification is required for any activity performing 2M/MTR site certifications and recertification of 2M/MTR technicians. The 2M/MTR Fleet Coordinator certifies 2M/MTR Inspector sites. NAVSEA certifies the 2M/MTR Fleet Coordinator and AMMT 2M Evaluator sites. The 2M/MTR Fleet Coordinator and NAVSEA shall document the certification process using 2M/MTR Certifying Site Certification (Appendix I). The 2M/MTR Certifying Site certification process consists of the following actions:

1. Identify activity (with UIC) being certified.
2. List date of the certification.
3. Identify certifying activity.
4. Conduct an arrival briefing with a command representative (Commanding Officer, OIC, Department Head or Division Director) and appropriate 2M/MTR personnel (2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluators).
5. Identify all assigned 2M/MTR Inspectors, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator personnel including name, rate, planned rotation date (PRD), certification level, and certification expiration date.
6. Inventory and verify performance of the applicable 2M/MTR equipment.
 - a. Document the serial number(s), quantities, and location(s) of the following equipment noting differences with the current configuration:
 - 2M Electronic Rework Power Unit: MBT-250-SD Station, PRC-2000-Through Hole (TH), PRC-2000-Surface Mount Technology (SMT).
 - Auxiliary Equipment: Microscope, Fiber Optic Lamp, ESD Constant Monitoring Station, Preheater, etc.
 - MTR Equipment: MTR Test Station Controller, MTR Test Equipment, ESD Constant Monitoring Station, Uninterruptible Power Supply, and associated accessories.
 - b. Inventory consumables, tools, and support equipment using the 2M/MTR Workstation Checklist (Appendix F).
 - c. Verify applicable 2M/MTR equipment is operational per (Appendix L).
7. Discuss and evaluate proposed changes in tools, equipment, techniques, and 2M and MTR training curriculum.
8. Verify certifying site has an ample supply of practice circuit cards, terminals, eyelets, solder cups, components, consumables, etc., to conduct 2M/MTR technician recertifications. List discrepancies and projected corrective actions.
9. Evaluate the site facility to ensure compliance with NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.
10. Verify at least one paper or electronic copy of the following 2M/MTR documents are in the possession of the 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator: OPNAVINST 4790.2 (series), VOL V, Chapter 23, OPNAVINST 4790.7 (series), OPNAVINST 4790.13 (series), NAVSEAINST 4790.17(series), NAVSEA TE000-AA-MAN-010/2M, NAVAIR SE-004-PQS-000, appropriate 2M/MTR TYCOM instruction(s), and the current 2M NTP S-30-8711.

11. Verify 2M/MTR Inspectors and 2M/MTR Fleet Coordinators are reporting completion of 2M/MTR Repair Site certifications in the 2M/MTR database and reporting completion of 2M/MTR personnel recertifications in the 2M/MTR database or via the 2M/MTR Personnel Certification Record (Appendix B).

12. Verify documented completion of locally generated JQR for each 2M/MTR Inspector and/or 2M/MTR Fleet Coordinator.

13. Review the certification status of all the 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator 2M/MTR sites.

14. The 2M/MTR Fleet Coordinator shall accompany and observe the 2M/MTR Inspector during a 2M/MTR site certification. NAVSEA shall accompany and observe the 2M/MTR Fleet Coordinator or AMMT 2M Evaluator during a 2M/MTR site certification or AMMT visit.

15. Summarize the certification:

a. **MAJOR DEFICIENCIES.** 2M/MTR deficiencies noted in the certification results may be minor or major and caused by missing, worn, or inoperable tools and equipment, a safety violation, or facility environmental deficiency. *A major deficiency impairs the capability to perform any specific task of a 2M repair or MTR fault isolation and is cause for failure of the 2M/MTR site certification.* Examples of major deficiencies include:

- Missing ESD control capabilities (e.g. missing or defective ESD mat or wrist strap).
- Any combination of missing tools or inoperable 2M/MTR equipment that would prevent completing some form of 2M repair, (missing several sizes of extractor tips, all flush and diagonal cutting pliers, etc.).
- Missing eye protection (missing both safety goggles and spectacles).
- 2M/MTR certifying site failing to meet the minimum standards of NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D Standard Maintenance Practices for 2M Electronic Assembly Repair, WP003 00, Facility Requirements.
- A recertifying technician is unable to sit with their legs under the workbench to properly operate footswitches that are on the deck or on a permanently installed stable platform.
- Insufficient quantity of individual power receptacles to support required 2M equipment and/or MTR equipment.
- Any missing or worn test system accessories, outdated software, or other item requiring replacement to support complete MTR Test Station configuration.

b. **MINOR DEFICIENCIES.** *A minor deficiency does not impair the capability to perform 2M repair actions or MTR diagnostic operations.* Examples of 2M/MTR minor deficiencies include:

- Missing a single size of extractor tip, eyelet, or ball mill.
- ESD procedures not being properly followed.
- Missing MTR software revisions.
- Worn dip clips.

c. **GENERAL COMMENTS.** List any comments and/or information; especially note outstanding performance by personnel or the activity.

d. Provide any recommendations for the personnel or activity to improve.

16. Insert the overall results of the certification process in terms of [capable/incapable] of conducting 2M/MTR site certifications and 2M/MTR personnel recertifications in accordance with this manual.

17. Conduct a departure briefing with a command representative (Commanding Officer, OIC, Department Head or Division Director) and appropriate 2M/MTR personnel (2M/MTR Inspectors, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluators). All discrepancies and recommendations for improvement shall be discussed and documented.

3.3.2. Recertification Requirements. The 2M/MTR Fleet Coordinators will certify all certifying sites under their purview every 18 months. NAVSEA may extend this interval up to 24 months to facilitate scheduling. NAVSEA will certify 2M/MTR Fleet Coordinator and AMMT Evaluator activities every 12 months. NAVSEA may extend this interval up to 18 months to facilitate scheduling. The 2M/MTR Fleet Coordinator or NAVSEA certifies activities as qualified to conduct 2M/MTR site certifications when minimum levels of certified personnel, equipment outfitting, and facility requirements are met. The 2M/MTR Fleet Coordinator and NAVSEA shall document the certification process using 2M/MTR Certifying Site Certification (Appendix J). The certification results shall be submitted to the command representative (Commanding Officer, OIC, or Department Head), with a copy to NAVAIR 6.7 for AMMT evaluators.

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Appendix A
PERFORMANCE INFORMATION MEMORANDUM

1610
(Orig. Code)
(Date)

PERFORMANCE INFORMATION MEMORANDUM

From: (Originating Command)

To: (Member's Permanent Duty Command)

Subj: **PERFORMANCE INFORMATION MEMORANDUM ICO** (Rank/Rate, Name, and SSN)

Ref: (a) BUPERSINST 1610.10

1. Period of duty: to:

2. Type of duty:

3. Duties assigned (or courses attended):

If the PIM covers course attendance, provide the information needed for Page 4 of the service record: Course Title, Course Identification Number, School Location, NEC Earned (if any), Course Length, Dates Enrolled and Completed, Final Mark, and Class Standing. If the course was not completed, give reason.

4. Comments:

All 2M technicians by virtue of holding a current certification are qualified for further training. 2M technicians completing A-100-0072, Miniature Electronics Repair with an overall course grade average of 90 percent or above or A-100-0073, Microminiature Electronics Repair with 95 percent or above and have not received a counseling sheet documenting continued violation of safety procedures are highly recommended for the next level of training. These percentages are provided as a guide to facilitate effective management decision-making regarding advanced 2M/MTR training. Technicians entering with these credentials have shown great success in completing the advanced 2M/MTR training.

I.M. OFFICER
By direction

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Appendix B
2M/MTR PERSONNEL CERTIFICATION RECORD

For those persons unable to update electronically the database, this form is provided for your convenience. Please forward to the following address within 15 days of issuance:

Commander
Naval Surface Warfare Center, Crane
Building 3330 North, Code 6083
300 Hwy 361
Crane, Indiana 47522-5001

The 2M Certification Agent is responsible for providing blank certification records and ID cards. Each issuing activity is responsible for keeping a log of all records and ID cards issued. This log will ensure that serial numbers are not skipped or duplicated.

PERSONAL DATA – PRIVACY ACT OF 1974 – HANDLE WITH CARE			
NAME (Last, first, middle initial)		CARD NO.	
SOCIAL SECURITY NO. (last four)		RATE/GRADE	WORKCENTER
ACTIVITY		UIC	PRD
Y	MINI	Y	INITIAL CERTIFICATION
Y	MICRO	Y	RECERTIFICATION
Y	MTR	Y	DISCHARGED
Use the reverse side of this card to justify change in certification		Y	OUT OF 2M PROGRAM
		Y	TRANSFERRED TO: (Activity and UIC)
ISSUED BY (Name)		ACTIVITY	
DATE OF ISSUE (MM/YY)		EXPIRATION DATE (MM/YY)	

2M/MTR PERSONNEL RECERTIFICATION RECORD
NSWCC 12410/18 (REV. 11/06)

PRIVACY ACT STATEMENT

This Department of Defense Certification Manual for 2M/MTR Program provides instructions and guidelines that enables the 2M/MTR Program to function and retain data pertinent to various "certified" ship and shore based facilities and activities. As a portion of this data, records concerning personnel identification, location (assigned organization code or workcenter code); are maintained in a secured password controlled database.

This document gathers and retains information subject to the Privacy Act of 1974. (5 U.S.C. 552a)

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2M/MTR CERTIFICATION IDENTIFICATION CARDS

2M TECNICIAN MINIATURE TECHNICIAN

Name

Rate Activity

is hereby designated as a Miniature Electronic Repair Technician
in the Navy 2M/MTR Program

Certified by Signature Card No.

 **NAVSEA**
NAVAL SEA SYSTEMS COMMAND

Issued Activity

By authority of Commander Naval Sea Systems
Command, Washington DC

(green)

2M TECNICIAN MICROMINIATURE TECHNICIAN

Name

Rate Activity

is hereby designated as a Microminiature Electronic Repair Technician
in the Navy 2M/MTR Program

Certified by Signature Card No.

 **NAVSEA**
NAVAL SEA SYSTEMS COMMAND

Issued Activity

By authority of Commander Naval Sea Systems
Command, Washington DC

(blue)


2M TECNICIAN RECERTIFIER

Name

Rate Activity

is hereby designated as a 2M Technician Recertifier
in the Navy 2M/MTR Program

Certified by Signature Card No.

 **NAVSEA**
NAVAL SEA SYSTEMS COMMAND

Issued Activity

By authority of Commander Naval Sea Systems
Command, Washington DC

(yellow)


2M INSTRUCTOR

Name

Rate Activity

is hereby designated as a 2M Instructor
in the Navy 2M/MTR Program

Certified by Signature Card No.

 **NAVSEA**
NAVAL SEA SYSTEMS COMMAND

Issued Activity

By authority of Commander Naval Sea Systems
Command, Washington DC

(white)


MODULE TEST AND REPAIR TECHNICIAN

Name

Rate Activity

is hereby designated as a Module Test and Repair Technician
in the Navy 2M/MTR Program

Certified by Signature Card No.

 **NAVSEA**
NAVAL SEA SYSTEMS COMMAND

Issued Activity

By authority of Commander Naval Sea Systems
Command, Washington DC

(orange)

Card Number Level

Date Expires

(reverse of all cards)

2M/MTR CERTIFICATION UPDATE (NAVY)

ADMINISTRATIVE REMARKS

NAVPERS 1070/613 (REV. 10-81)

E-32

SERVICE MEMBER COMMAND PRINTED HERE

1. The individual indicated has successfully completed the [Miniature Electronic Repair Technician / Microminiature Electronic Repair Technician / MTR Technician / 2M/MTR Technician] requirements for recertification as identified in the Certification Manual for 2M/MTR Program (NAVSEA TE000-AA-MAN-010/2M / NAVAIR SE-004-PQS-000).
2. Recertification was granted [Date].
3. Certification will expire [Date].
4. This entry verifies that the technician is fully qualified and authorized to conduct [2M repairs / MTR fault isolation] at the [miniature / microminiature / MTR / 2M/MTR] level.
5. Final overall performance test grade average is [#grade].
6. Certification Serial Number is [XXXX####].

2M TECHNICIAN RECERTIFIER
2M/MTR INSPECTOR
2M INSTRUCTOR

ACKNOWLEDGED (SERVICE MEMBER)

(NAVAIR) AIMD Officer/OIC

DATE

NAME (LAST, FIRST, MI)	LAST FOUR DIGITS OF SSN	BRANCH & CLASS

Appendix C MINIATURE RECERTIFICATION PERFORMANCE TEST

TECHNICIAN NAME: _____ RATE: _____

ACTIVITY: _____ UIC: _____ W/C: _____ PRD: _____

1. The Miniature Electronic Repair Technician *must satisfactorily* complete the projects listed below. All specifications are contained in NAVAIR 01-1A-23, NAVSEA SE004-AK-TRS-010/2M with reference work package paragraphs noted. All work *must* comply with the workmanship standards listed in the respective work package paragraphs.

PROJECT	REFERENCE PARAGRAPH	TECH GRADE	RECERT GRADE
a. Identify four of five and remove two of the following conformal coating types: Type AR, ER, SR, UR, or XY			
• Conformal coating identification	6.3.3		
	SAT/UNSAT		
b. Install a single wire on a turret or hook terminal			
• Wires	8.4.1		
• Insulated Wire Stripping	8.4.2		
• Insulated Wire Tinning	8.4.3		
• Insulation Clearance	8.4.4		
• Soldering (Specific to Installation of Wires on Terminals)	8.4.5		
• Turret Terminals	8.5.1		
• Hook Terminals	8.5.2		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		
c. Install a double wire on a turret or hook terminal			
• Wires	8.4.1		
• Insulated Wire Stripping	8.4.2		
• Insulated Wire Tinning	8.4.3		
• Insulation Clearance	8.4.4		
• Soldering (Specific to Installation of Wires on Terminals)	8.4.5		
• Turret Terminals	8.5.1		

PROJECT	REFERENCE PARAGRAPH	TECH GRADE	RECERT GRADE
• Hook Terminals	8.5.2		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		
d. Install a single wire to a solder cup			
• Wires	8.4.1		
• Insulated Wire Stripping	8.4.2		
• Insulated Wire Tinning	8.4.3		
• Installation of Wires in Solder Cups	9.4.4		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		
e. Conductor repair: pad replacement with a flat-set eyelet			
• Pads and Conductors	12.4.1		
• Laminate	11.4.1		
• Eyeletting	12.4.2		
• Lap Solder Repair	12.4.4		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		
f. Remove and replace a horizontal mount, full clinch, axial lead component on a double-sided CCA			
• Discrete Component Leads	7.4.1		
• Discrete Component Body (Applicable to All Components)	7.4.2		
• Pads and Conductors	12.4.1		
• Laminate	11.4.1		
• Component Lead Tinning	7.4.4		
• Component Lead Forming	7.4.9		
• Component Orientation	7.4.10		
• Horizontal, Axial Leaded Component Mounting	7.4.11		
• Full Clinch Lead Terminations	7.4.18		

PROJECT	REFERENCE PARAGRAPH	TECH GRADE	RECERT GRADE
<ul style="list-style-type: none"> Solder Acceptability Requirements (Specific to Installation of Through-Hole Components) 	7.4.19		
<ul style="list-style-type: none"> Solder Acceptability Requirements 	5.13.1		
<ul style="list-style-type: none"> Post Solder Connection Cleanliness 	5.13.2		
	FINAL GRADE		
g. Remove and replace a 14/16 lead dual in-line package (DIP)			
<ul style="list-style-type: none"> Discrete Component Leads 	7.4.1		
<ul style="list-style-type: none"> Discrete Component Body (Applicable to All Components) 	7.4.2		
<ul style="list-style-type: none"> Pads and Conductors 	12.4.1		
<ul style="list-style-type: none"> Laminate 	11.4.1		
<ul style="list-style-type: none"> Component Lead Tinning 	7.4.4		
<ul style="list-style-type: none"> Component Orientation 	7.4.10		
<ul style="list-style-type: none"> Dual In-Line Package Mounting 	7.4.15		
<ul style="list-style-type: none"> Solder Acceptability Requirements (Specific to Installation of Through-Hole Components) 	7.4.19		
<ul style="list-style-type: none"> Solder Acceptability Requirements 	5.13.1		
<ul style="list-style-type: none"> Post Solder Connection Cleanliness 	5.13.2		
	FINAL GRADE		
h. Remove and replace a 14/16 lead flat pack			
<ul style="list-style-type: none"> Component Leads 	18.12.4		
<ul style="list-style-type: none"> Lands and Conductors 	18.12.5		
<ul style="list-style-type: none"> Laminate 	11.4.1		
<ul style="list-style-type: none"> Component Mounting 	18.12.6		
<ul style="list-style-type: none"> Components with Flat Ribbon, L, Inward L, or Gull Wing Leads 	18.12.10		
<ul style="list-style-type: none"> Flat Pack Lead Forming 	18.12.11		
<ul style="list-style-type: none"> Flat Pack Lead Termination 	18.12.12		
<ul style="list-style-type: none"> Surface Mount Soldering Anomalies 	18.12.16		
<ul style="list-style-type: none"> Solder Acceptability Requirements 	5.13.1		
<ul style="list-style-type: none"> Post Solder Connection Cleanliness 	5.13.2		
	FINAL GRADE		

2. During the recertification, the technician observed all safety precautions and maintained a clean, orderly, and electrostatic discharge (ESD) safe work area. [SAT/UNSAT]

EVALUATION BY: _____

START DATE: _____ COMPLETION DATE: _____

OVERALL PERFORMANCE TEST GRADE AVERAGE: _____

NOTES: _____

Original To: [Technician (Training Record)]
Copy To: [2M Technician Recertifier or 2M/MTR Inspector]

Appendix D

MICROMINIATURE RECERTIFICATION PERFORMANCE TEST

TECHNICIAN NAME: _____ RATE: _____

ACTIVITY: _____ UIC: _____ W/C: _____ PRD: _____

1. The Microminiature Electronic Repair Technician *must satisfactorily* complete the projects listed below. All specifications are contained in NAVAIR 01-1A-23, NAVSEA SE004-AK-TRS-010/2M with reference work package paragraphs noted. All work *must* comply with the workmanship standards listed in the respective work package paragraphs.

PROJECT	REFERENCE PARAGRAPH	TECH GRADE	RECERT GRADE
a. Identify four of five and remove two of the following conformal coating types: Type AR, ER, SR, UR, or XY			
• Conformal coating identification	6.3.3		
	SAT/UNSAT		
b. Install a single wire on a turret or hook terminal			
• Wires	8.4.1		
• Insulated Wire Stripping	8.4.2		
• Insulated Wire Tinning	8.4.3		
• Insulation Clearance	8.4.4		
• Soldering (Specific to Installation of Wires on Terminals)	8.4.5		
• Turret Terminals	8.5.1		
• Hook Terminals	8.5.2		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		
c. Install a double wire on a turret or hook terminal			
• Wires	8.4.1		
• Insulated Wire Stripping	8.4.2		
• Insulated Wire Tinning	8.4.3		
• Insulation Clearance	8.4.4		
• Soldering (Specific to Installation of Wires on Terminals)	8.4.5		
• Turret Terminals	8.5.1		

PROJECT	REFERENCE PARAGRAPH	TECH GRADE	RECERT GRADE
<ul style="list-style-type: none"> Hook Terminals 	8.5.2		
<ul style="list-style-type: none"> Solder Acceptability Requirements 	5.13.1		
<ul style="list-style-type: none"> Post Solder Connection Cleanliness 	5.13.2		
	FINAL GRADE		
d. Remove and replace a 14/16 lead Dual In-line Package (DIP)			
<ul style="list-style-type: none"> Discrete Component Leads 	7.4.1		
<ul style="list-style-type: none"> Discrete Component Body (Applicable to All Components) 	7.4.2		
<ul style="list-style-type: none"> Pads and Conductors 	12.4.1		
<ul style="list-style-type: none"> Laminate 	11.4.1		
<ul style="list-style-type: none"> Component Lead Tinning 	7.4.4		
<ul style="list-style-type: none"> Component Orientation 	7.4.10		
<ul style="list-style-type: none"> Dual In-Line Package Mounting 	7.4.15		
<ul style="list-style-type: none"> Solder Acceptability Requirements (Specific to Installation of Through-Hole Components) 	7.4.19		
<ul style="list-style-type: none"> Solder Acceptability Requirements 	5.13.1		
<ul style="list-style-type: none"> Post Solder Connection Cleanliness 	5.13.2		
	FINAL GRADE		
e. Repair flexible laminate and conductor OR Plastic panel defective bulb removal and replacement			
<ul style="list-style-type: none"> Flexible Laminate 	13.4.1		
<ul style="list-style-type: none"> Laminate Removal (Flexible Laminate) 	13.4.2		
<ul style="list-style-type: none"> Conductor Removal and Replacement (Flexible Laminate) 	13.4.3		
<ul style="list-style-type: none"> Excavation (Plastic Panel) 	16.4.2		
<ul style="list-style-type: none"> Bulb Replacement (Plastic Panel) 	16.4.3		
<ul style="list-style-type: none"> Solder Acceptability Requirements 	5.13.1		
<ul style="list-style-type: none"> Post Solder Connection Cleanliness 	5.13.2		
	FINAL GRADE		
f. Repair multilayer CCA laminate and conductors by excavating down two layers, remove and replace lower level conductor only			
<ul style="list-style-type: none"> Pads and Conductors 	12.4.1		

PROJECT	REFERENCE PARAGRAPH	TECH GRADE	RECERT GRADE
• Laminate	11.4.1		
• Excavation	15.4.1		
• Conductor Replacement	15.4.2		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		
g. Remove and install a MELF or chip resistor or capacitor			
• Component Cracks and Chip-Outs	18.12.1		
• Component Metallization Loss	18.12.2		
• Component Leaching	18.12.3		
• Lands and Conductors	18.12.5		
• Laminate Damage	11.4.1		
• Component Mounting	18.12.6		
• Rectangular or Square End Chip Components with 1, 3, or 5 Sided Terminations (Chip Resistor or Chip Capacitor)	18.12.8		
• Chip Components with Cylindrical End Cap Terminations (MELF)	18.12.9		
• Surface Mount Soldering Anomalies	18.12.16		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		
h. Remove and install a SOT or SOIC			
• Component Leads	18.12.4		
• Lands and Conductors	18.12.5		
• Laminate Damage	11.4.1		
• Component Mounting	18.12.6		
• Components with Flat Ribbon, L, Inward L, or Gull Wing Leads	18.12.10		
• Surface Mount Soldering Anomalies	18.12.16		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		

PROJECT	REFERENCE PARAGRAPH	TECH GRADE	RECERT GRADE
i. Remove and install a PQFP, PLCC, or LCCC			
• Component Leads	18.12.4		
• Lands and Conductors	18.12.5		
• Laminate Damage	11.4.1		
• Component Mounting	18.12.6		
• Components with Flat Ribbon, L, Inward L, or Gull Wing Leads (PQFP)	18.12.10		
• Components with J-Leads (PLCC)	18.12.14		
• Components with Castellated Terminations (LCCC)	18.12.15		
• Surface Mount Soldering Anomalies	18.12.16		
• Solder Acceptability Requirements	5.13.1		
• Post Solder Connection Cleanliness	5.13.2		
	FINAL GRADE		

2. During the recertification, the technician observed all safety precautions and maintained a clean, orderly, and electrostatic discharge (ESD) safe work area. [SAT/UNSAT]

EVALUATION BY: _____

START DATE: _____ COMPLETION DATE: _____

OVERALL PERFORMANCE TEST GRADE AVERAGE: _____

NOTES: _____

Original To: [Technician (Training Record)]
Copy To: [2M Technician Recertifier or 2M/MTR Inspector]

Appendix E
MTR RECERTIFICATION PERFORMANCE TEST

TECHNICIAN NAME: _____ RATE: _____

ACTIVITY: _____ UIC: _____ W/C: _____ PRD: _____

1. The MTR Technician *must satisfactorily* complete the following tasks:

a. Demonstrate ability to verify that current software is loaded on the Controller. Fill in each blank for latest software version.

_____ Windows Operating Software
_____ Huntron Workstation
_____ MTR Tracking System
_____ MTR Dispatcher
_____ DVD Test Routine Release number
_____ Anti-Virus (Norton/McAfee)

b. _____ Demonstrate the ability to configure the Hardware Settings and Preferences using Huntron Workstation software.

c. _____ Demonstrate the ability to accomplish AN/USM-674 Diagnostics.

What are the minimum requirements and periodicity according to PMS?

d. _____ Load Databases into the MTR Dispatcher.

e. _____ Download a Test Routine from MTR Dispatcher (P/N 214225-1).

f. _____ Troubleshoot a faulted circuit card assembly and identify the faulty component.

g. _____ Complete MTR Tracking System entry on faulted CCA.

h. _____ Complete MTR Tracking System entry with Recertifier provided scenarios.

i. _____ Provide a MTRTS Backup File to NUWC DET FEO NORFOLK for submission.

What e-mail address do you send the report to?

2. During the recertification, the technician observed all safety precautions and maintained a clean, orderly, and electrostatic discharge (ESD) safe work area. [SAT/UNSAT]

EVALUATION BY: _____

START DATE: _____ COMPLETION DATE: _____

OVERALL PERFORMANCE TEST GRADE AVERAGE: _____

NOTES: _____

Original To: [Technician (Training Record)]
Copy To: [2M/MTR Inspector]

Appendix F
2M/MTR WORKSTATION CHECKLIST

1. 2M Consumables

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
ANTISTATIC AND CLEANER COMPOUND	6850-01-283-9966	6001	QT	1 QT		X	X
ADHESIVE (EPOXY PATCH)	8040-00-061-8303	EPK 0151	KT	1 KT	X	X	X
APPLICATOR, DISPOSABLE, COTTON	6515-01-234-6838	362	PG of 100	1 PG	X	X	X
BAG, STATIC DISSIPATIVE, 12 x 16	8105-01-386-3868	7101216ZL	EA	3 EA	X	X	X
BAG, STATIC DISSIPATIVE, 8 x 10	8105-01-386-3899	7100810ZL	EA	3 EA	X	X	X
BAG, STATIC DISSIPATIVE, 4 x 8	8105-01-386-3874	7100408ZL	EA	3 EA	X	X	X
BLADE, SURGICAL KNIFE, DET (NO11)	6515-00-660-0010	GGH0080SZ11	PG of 6	1 EA	X	X	X
BLADE, SURGICAL KNIFE, DET (NO15)	6515-00-660-0008	GGH0080SZ15	PG of 6	1 EA	X	X	X
BRUSH, ACID SWABBING	7920-00-514-2417	A-A-289	GR	12 EA	X	X	X
BRUSH, BRISTLE, DENTAL (HARD)	6520-01-056-7376	6161	PG of 6	1 EA	X	X	X
BRUSH, WIRE, SCRATCH (1/8" DIA.)	7920-00-018-7091	1127-0006-P5	PG of 5	1 EA	X	X	X
BRUSH, WIRE, SCRATCH (3/16" DIA.)	7920-01-364-1908	1127-0014-P5	PG of 5	1 EA	X	X	X
BUR, DENTAL, EXCAVATING (#35 INV CONE)	6520-01-003-2267	14853	PG of 10	1 EA	X	X	X
BUR, DENTAL, EXCAVATING (NO1/2 STR)	6520-01-003-3132	382302	PG of 10	1 EA	X	X	X
BUR, DENTAL, EXCAVATING (NO2 STR)	6520-01-003-2269	14826	PG of 10	1 EA	X	X	X
BUR, DENTAL, EXCAVATING (NO4 STR)	6520-01-003-2270	14832	PG of 10	1 EA	X	X	X
BUR, DENTAL, EXCAVATING (NO6 STR)	6520-01-003-2271	14838	PG of 10	1 EA	X	X	X
BUR, DENTAL, EXCAVATING (NO8 STR)	6520-01-003-3131	14844	PG of 10	1 EA	X	X	X
BUR, DENTAL, EXCAVATING (NO 559)	6520-01-003-2260	14877	PG of 10	1 EA	X	X	X
CLEANING COMPOUND, OPTICAL LENS	6850-00-392-9751	A-A-59199	BT	1 BT		X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
DESOLDERING WICK (NO1)	3439-00-545-3396	50-1-5	EA	3 EA	X	X	X
DESOLDERING WICK (NO2)	3439-01-324-8208	50-2-5	EA	3 EA	X	X	X
DESOLDERING WICK (NO3)	3439-00-009-2334	50-3-5	SL	3 SL	X	X	X
DISK, ABRASIVE (SILICON CARBIDE)	6520-00-523-2150	11.780	BX of 100	1 BX	X	X	X
EYELET, METALLIC (CME15)	5325-00-139-0328	CME15	EA	10 EA	X	X	X
EYELET, METALLIC (CME26)	5325-00-234-7913	CME26C	EA	10 EA	X	X	X
EYELET, METALLIC (CME36)	5325-00-558-1785	CME36C	PG of 100	10 EA	X	X	X
EYELET, METALLIC (CME46)	5325-01-076-9499	CME46C	EA	10 EA	X	X	X
BLADE, CIRCULAR SAW (SLOTING SAW)	3455-00-189-7191	1112-0061-P10	PG of 10	2 EA	X	X	X
FLUX-PEN (KESTER)	3439-01-510-2558	83-1000-0186	EA	1 EA	X		
FLUX, SOLDERING	3439-00-069-5815	FORMULA 196 1QT	QT	1 QT		X	X
FOIL, COPPER OR	9535-00-268-9571	ASTM B152	RO	1 RO	X	X	X
FOIL, COPPER TAPE	7510-00-149-0308	1181-1"	RO	1 RO	X	X	X
TRACK PAD REPAIR KIT OR	4940-01-054-0041	6993-0037	EA	1 EA	X	X	X
TRACK REPAIR KIT	5895-01-136-2705	2570-0010	EA	1 EA	X	X	X
ISOPROPYL ALCOHOL, TECHNICAL	6810-00-983-8551	TTI735	QT	1 QT	X	X	X
LABEL (ESD)	7690-01-077-4894	L-81	RO	1 RO	X	X	X
MINERAL OIL, USP	6505-00-133-6000	NDC00003-0559061	CO	1 CO		X	X
PAPER, ABRASIVE (400 GRIT)	5350-00-224-7201	ANSIB74.18	PG of 50	1 EA	X	X	X
PAPER, ABRASIVE (600 GRIT)	5350-00-224-7215	ANSIB74.18	PG of 50	1 EA	X	X	X
PAPER, LENS	6640-00-240-5851	NNNP40	PG	1 PG		X	X
SOLDER, PASTE OR	3439-01-384-2071	6-SN63-211A	BX of 10	1 EA			OPTIONAL
SOLDER, PASTE	3439-01-456-5438	615D	CO of 6	1 CO			OPTIONAL
SOLDER, TIN ALLOY (.015) OR	3439-01-008-7580	SN63WRMAP3	SL	1 SL	X	X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
SOLDER, TIN ALLOY (.015)	3439-01-510-5302	24-6337-9703	SL	1 SL	X	X	X
SOLDER, TIN ALLOY (.028)	3439-01-008-7577	SN63WRMAP3	SL	1 SL		X	X
SOLDER, TIN ALLOY (.031)	3439-01-510-6209	533-24-6337-9710	SL	1 SL	X		
SOLDER, TIN ALLOY (.036)	3439-01-008-7578	SN63WRMAP3	SL	1 SL		X	X
SOLDER, TIN ALLOY (.063)	3439-00-473-2000	SN63WRMAP3	SL	1 SL		X	X
SOLDER, TIN ALLOY (.090)	3439-01-146-6953	SN63WRMAP3	SL	1 SL		OPTIONAL	OPTIONAL
TOWEL, PAPER (SMALL)	7920-00-721-8884	900S	CS of 60	1 BX	X	X	X
VISIFILTER, REPLACEMENT	4330-01-148-7954	1309-0027-P10	PG of 10	1 EA	X	X	X

2. 2M Tools

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
ORANGEWOOD STICK, ALIGNMENT	5120-00-293-2081	ESA319633	EA	1 EA	X	X	X
ANVIL, JEWELER'S	5120-00-618-4913	12.312	EA	1 EA	X	X	X
BRUSH, BRASS, PLATERS	7920-01-127-4376	71966	EA	1 EA	X	X	X
BURNISHER, DENTAL	6520-01-055-5086	BB26/27S	EA	1 EA	X	X	X
CARVER, DENTAL (NO. 89-92)	6520-00-935-7254	21294	EA	1 EA	X	X	X
CARVER, DENTAL HOLL (NO. 1/2)	6520-00-935-7171	23106	EA	1 EA	X	X	X
CHISEL, DENTAL (NO. 23)	6520-01-529-8715	F23/23R	EA	1 EA	X	X	X
CHISEL, DENTAL (NO. 3/4)	6520-00-935-7178	3G2035	EA	1 EA	X	X	X
CLAMP, C	5120-00-596-4053	A-A-430	EA	1 EA	X	X	X
DISPENSER, FLUX, ESD SAFE, FELT TIP	OPEN PURCHASE	FD-PEN-ESD	EA	1 EA		X	X
DISPENSER, FLUX, ESD SAFE, STR TIP	OPEN PURCHASE	FD-2-ESD	EA	1 EA		X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
DISPENSER, SOLVENT, ESD SAFE	6520-01-529-8711	SD-6-ESD-PP	EA	1 EA	X	X	X
DRILL SET, TWIST (NO. 61 TO 80)	5133-00-555-1528	420	SE	1 SE	X	X	X
DRILL, TWIST (NO. 50)	5133-00-189-9295	01078	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 51)	5133-00-189-9296	01076	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 52)	5133-00-189-9297	01073	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 53)	5133-00-189-9298	01069	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 54)	5133-00-189-9299	01065	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 55)	5133-00-189-9300	10163	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 56)	5133-00-189-9301	01058	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 57)	5133-00-189-9302	01055	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 58)	5133-00-189-9303	01054	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 59)	5133-00-189-9304	01052	DZ	2 EA	X	X	X
DRILL, TWIST (NO. 60)	5133-00-189-9305	01051	DZ	2 EA	X	X	X
EXPLORER, DENTAL (#23)	6520-00-528-1000	EXS23	EA	1 EA	X	X	X
EXPLORER, DENTAL (#6)	6520-00-528-0000	EXS6	EA	1 EA	X	X	X
FILE SET, HAND	5110-01-430-6833	S475	SE	1 SE	X	X	X
FILE, BONE	6520-00-528-5050	23394	EA	1 EA	X	X	X
GAGE, TWIST DRILL (NO. 1 TO 60)	5210-00-221-1893	41G460	EA	1 EA	X	X	X
GAGE, TWIST DRILL (NO. 61 TO 80)	5210-00-555-7993	5054	EA	1 EA	X	X	X
GOGGLES, INDUSTRIAL	4240-01-063-5996	484BAF	EA	1 EA		X	X
HAMMER, HAND	5120-00-061-8540	21-004	EA	1 EA	X	X	X
HANDLE, SURGICAL KNIFE (NO. 9)	6515-00-344-7920	4-16	EA	1 EA	X	X	X
HEAT SINK, ELECTRICAL (HS3)	5999-00-677-9861	HS3	EA	3 EA	X	X	X
MANDREL, DENTAL (STRAIGHT)	6520-00-926-8846	9268846	PG of 6	1 EA	X	X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
MINIMITE CORDLESS TOOL	5130-01-520-4703	750-02	EA	1 EA	X		
BATTERY, STORAGE, MINIMITE	6140-01-510-4336	755	EA	1 EA	X		
CHARGER, BATTERY, MINIMITE	6130-01-510-4337	756	EA	1 EA	X		
COLLET NUT KIT (DREMEL 750)	5180-01-480-4879	4485	KT	1 KT	X		
MIXING SLAB, DENTAL	6520-00-556-2000	27.220	EA	1 EA	X	X	X
PLIERS (MICRO DUCKBILL)	5120-01-028-7102	46.0281	EA	1 EA	X	X	X
PLIERS, DIAGONAL CTG (UTILITY)	5110-01-083-9317	D209-5C	EA	1 EA	X	X	X
PLIERS, FLAT FORMING, SOFT TIP	5110-01-513-4297	533-US	EA	1 EA	X	X	X
PLIERS, FLUSH CUT	5110-01-524-7565	7148E	EA	1 EA	X	X	X
PLIERS, FULL FLUSH CUTTER, ANG	5110-01-520-5185	7272E	EA	1 EA	X	X	X
PLIERS, LONG CHAIN NOSE	5120-01-513-9587	744-IA-MW1	EA	1 EA	X	X	X
PUNCH, CENTER, SOLID	5120-01-367-7204	264C	EA	1 EA	X	X	X
PUNCH, DRIVE PIN (1/4 IN)	5120-00-240-6083	565G	EA	1 EA	X	X	X
PUNCH, DRIVE PIN (5/32 IN)	5120-00-240-6104	565D	EA	1 EA	X	X	X
RULE, MACHINIST'S	5210-00-234-5223	32111	EA	1 EA	X	X	X
RULE, MACHINIST'S, POCKET CLIP	5210-00-203-7703	32036	EA	1 EA	X		
SCISSORS, GENERAL SURGICAL	6515-00-365-1200	103-2	EA	1 EA	X	X	X
SCREWDRIVER, FLAT TIP (PACE)	5120-01-397-4016	1100-0230	EA	1 EA	X	X	X
SOLDER REMOVAL TOOL	3439-01-064-1811	AS196	EA	1 EA		X	X
SPATULA, DENTAL (NO. 324)	6520-00-556-8000	CS24	EA	1 EA		X	X
SPECTACLES, INDUSTRIAL	4240-01-140-0282	T18000	PR	1 PR	X	X	X
SPUDGER	5120-01-514-7806	SH-81	EA	1 EA	X	X	X
STONE, SHARPENING	5345-01-513-8429	HB13T	EA	1 EA	X	X	X
STRIPPER, WIRE, HAND (16-26-AWG)	5110-00-768-3800	45-187	EA	1 EA	X	X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
BLADE, WIRE STRIPPER	5110-01-097-0762	L-5560	SE	1 SE		X	X
TIP CLEANER KIT	3439-01-483-2145	6993-0200	EA	1 EA	X	X	X
TIP TOOL	5120-01-373-3722	1100-0206	EA	1 EA	X	X	X
TWEEZERS, ANTIWICKING (AWG18)	5120-00-954-1265	AWG18	EA	1 EA	X	X	X
TWEEZERS, ANTIWICKING (AWG20)	5120-00-954-1269	AWG20	EA	1 EA	X	X	X
TWEEZERS, ANTIWICKING (AWG22)	5120-00-954-1270	AWG22	EA	1 EA	X	X	X
TWEEZERS, ANTIWICKING (AWG24)	5120-00-954-1272	AWG24	EA	1 EA	X	X	X
TWEEZERS, CURVED POINT	5120-01-520-5184	7SA	EA	1 EA	X	X	X
TWEEZERS, SELF LOCKING	5120-00-293-0149	7946	EA	1 EA	X	X	X
WISE, PIN	5120-01-367-7116	165	EA	1 EA	X	X	X

3. 2M Support Equipment

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
BINOCULAR, CLIP-ON (ESCHENBACH)	OPEN PURCHASE	1636-2	EA	1 EA	X		
CASE, TRANSIT	OPEN PURCHASE	05-5379	EA	1 EA	X		
CLEANING STATION, SMT	3439-01-399-3995	6021-0006	EA	1 EA	X	X	X
CLEANING TOOL, FIBER	5120-01-396-1876	1100-0232	EA	1 EA	X	X	X
FIBER, FILLER, REPLACEMENT	7920-01-395-1564	1127-0013-P2	PG of 2	1 EA	X	X	X
CLEANING TOOL, SPONGE	5120-01-408-9241	1100-0233	EA	1 EA	X	X	X
SPONGE, FILLER, REPLACEMENT	7920-01-395-1560	4021-0006-P5	PG of 5	1 EA	X	X	X
GAGE, COMPOUND PRESSURE	6685-00-248-6975	046646	EA	1 EA	X	X	X
ADAPTER, COMPOUND PRES GAUGE	4730-01-203-8069	(1066X4X4)	EA	1 EA	X	X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
PREHEATER, HS-150 OR	3439-01-330-7824	8040-0001	EA	1 EA			X
PREHEATER, HS-200 OR	3439-01-500-6097	8007-0231	EA	1 EA			X
PREHEATER, ST-400	OPEN PURCHASE	8007-0435	EA	1 EA			X
HOLDER, CIRCUIT BOARD, ST-525	OPEN PURCHASE	6993-0253-P1	EA	1 EA			X
HOLDER, CIRCUIT BOARD	5998-01-174-3157	315	EA	1 EA	X		
HOLDER, CIRCUIT BOARD	5999-01-184-2449	333	EA	1 EA		X	X
KIT, REDI-RAK, HANDPIECE	3439-01-380-8678	6019-0023	EA	1 EA		X	X
LIGHT, DESK (DAZOR) OR	6210-01-127-5432	3612	EA	1 EA	X		
LAMP, INCANDESCENT	6240-00-617-0991	1073	EA	1 EA	X		
LIGHT, HALOGEN (SUNNEX)	OPEN PURCHASE	HT-302-12	EA	1 EA	X		
LAMP, HALOGEN	6240-01-074-4599	64425	EA	1 EA	X		
LIGHT, DESK (BLUE GOOSENECK) OR	6230-01-033-2081	221217	EA	1 EA		X	X
LAMP, INCANDESCENT (FLOOD)	6240-01-029-1113	15R14SC/FL	EA	1 EA		X	X
LAMP, INCANDESCENT (SPOT)	6240-01-029-5988	15R14SC/SP	EA	1 EA		X	X
LIGHT, FIBER OPTIC (Techni-Quip) OR	Part of Microscope	TQ-FOI	EA	1 EA		X	X
LAMP, HALOGEN, 21V/150W	6240-01-331-0841	EKE	EA	1 EA		X	X
LIGHT, FIBER OPTIC (FRYER MKII) OR	Part of Microscope	F76221	EA	1 EA		X	X
LAMP, HALOGEN, 21V/150W	6240-00-261-9936	EJA	EA	1 EA		X	X
LIGHT, FIBER OPTIC (FOSTEC) OR	Part of Microscope	20500	EA	1 EA		X	X
LAMP, HALOGEN, 20V/150W	6240-01-083-5851	DDL	EA	1 EA		X	X
LIGHT, FIBER OPTIC (STOCKER-YALE)	Part of Microscope	21AS1K100x	EA	1 EA		X	X
LAMP, HALOGEN, 21V/150W	6240-01-331-0841	EKE	EA	1 EA		X	X
MICROCHINE, ROTARY (MC-65)	3439-01-383-1037	7026-0001-P1	EA	1 EA		X	X
PROBE BRAKE, PATCH CORD	6625-01-406-7807	1332-0159	EA	1 EA		X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
MICROSCOPE, OPTICAL	6650-01-189-4433	EMZ5 or Equivalent	EA	1 EA		X	X
POWER SUPPLY, PPS-85A (MBT-250)	3439-01-377-7760	8007-0203	EA	1 EA	X		
POWER SUPPLY, PPS-400 (PRC-2000)	6130-01-407-1338	7008-0187	EA	1 EA		X	X
CABLE ASSY (UNIVERSAL POWER)	6150-01-227-5907	7000-0023	EA	1 EA		X	X
CHART, TIP & TEMP	7610-01-423-7309	5050-0251	EA	1 EA	X	X	X
STAND, CHART, TIP & TEMP	9905-01-395-4048	1257-0186	EA	1 EA	X	X	X
CORD, POWER, ELECTRICAL	6145-01-398-0392	1332-0094	EA	1 EA	X	X	X
CUBBY KIT, SMR	3439-01-383-1855	6019-0022-P1	EA	1 EA		X	X
EXTRACTOR, DESOLDERING, (SX-70) OR	3439-01-383-1797	6010-0077-P1	EA	1 EA		X	X
DISCONNECT, QUICK, FEMALE	5935-01-393-3037	1259-0086	EA	1 EA		X	X
DISCONNECT, QUICK, MALE	5935-01-393-3036	1259-0087	EA	2 EA		X	X
FILTER, (VISIFILTER 2)	4330-01-148-9052	1309-0028	EA	1 EA		X	X
FILTER ELEMENT, VISIFILTER II	4430-01-499-4616	1309-0027-P50	EA	10 EA		X	X
FILTER, GLASS CHAMBER	4470-01-088-4158	1309-0018-P10	PG OF 10	2 EA		X	X
GLASS TUBE, (SX-70)	9340-01-325-6184	1265-0009-P1	EA	1 EA		X	X
HOLDER TUBE/WIRE, GRY (PK6)	4730-01-398-8488	1321-0085-01-P6	PG of 6	1 EA		X	X
SCREW, MACHINE (SET SCREW)	5305-01-343-6739	1348-0547-P10	PG of 10	1 EA		X	X
SPONGE, TIP & TOOL STAND	7920-01-406-2958	4021-0008-P3	PG of 3	1 EA		X	X
TIP, SX, 3/16 SHANK, 0.030" ID	3439-01-376-8029	1121-0367-P5	PG of 5	1 EA		X	X
TIP, SX, 3/16 SHANK, 0.040" ID	3439-01-376-8030	1121-0342-P5	PG of 5	1 EA		X	X
TIP, SX, 3/16 SHANK, 0.060" ID	3439-01-380-8647	1121-0368-P5	PG of 5	1 EA		X	X
TOOL STAND, SX-70	3439-01-398-2749	6019-0044-P1	EA	1 EA		X	X
TUBING, (PVC, CLEAR, 1")	9330-01-408-6364	1325-0003-07	EA	2 EA		X	X
TUBING, SIL., .125ID, 54"L, BLACK	4710-01-476-9807	1342-0015-08	EA	1 EA		X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
EXTRACTOR, DESOLDERING, (SX-80)	3439-01-476-0901	6010-0106-P1	EA	1 EA	X	X	X
DISCONNECT, QUICK, FEMALE	5935-01-393-3037	1259-0086	EA	1 EA	X	X	X
DISCONNECT, QUICK, MALE	5935-01-393-3036	1259-0087	EA	2 EA	X	X	X
FILTER, (VISIFILTER 2)	4330-01-148-9052	1309-0028	EA	1 EA	X	X	X
FILTER ELEMENT, VISIFILTER II	4330-01-499-4616	1309-0027-P50	EA	10 EA	X	X	X
FLUX/SODR TRAP, PAPER (SX-80) OR	3439-01-480-6255	1309-0054-P10	PG of 10	1 EA	X	X	X
FLUX/SODR TRAP, GLASS (SX-80)	3439-01-510-9227	6000-0212-P1	PG of 2	1 EA	X	X	X
FILTER, GLASS CHAMBER	4470-01-088-4158	1309-0018-P10	PG OF 10	2 EA	X	X	X
HOLDER TUBE/WIRE, GRY (PK6)	4730-01-398-8488	1321-0085-01-P6	PG of 6	1 EA	X	X	X
SCREW, MACHINE (SET SCREW)	5305-01-343-6739	1348-0547-P10	PG of 10	1 EA	X	X	X
SPONGE, TIP & TOOL STAND	7920-01-406-2958	4021-0008-P3	PG of 3	1 EA	X	X	X
TIP, SX, 0.030" ID, ENDURA	3439-01-479-4487	1121-0625-P5	PG of 5	1 EA	X	X	X
TIP, SX, 0.040" ID, ENDURA	3439-01-479-4488	1121-0624-P5	PG of 5	1 EA	X	X	X
TIP, SX, 0.060" ID, ENDURA	3439-01-479-4489	1121-0626-P5	PG of 5	1 EA	X	X	X
TIP, SX, FLO-D-SODR, ENDURA	3439-01-479-4494	1121-0631-P5	PG of 5	1 EA	X	X	X
TIP, SX, PRECISION 0.020ID, ENDURA	3439-01-511-1037	1121-0681-P5	PG of 5	1 EA			X
TIP, SX, PRECISION 0.040ID, ENDURA	3439-01-511-1040	1121-0683-P5	PG of 5	1 EA			X
TOOL STAND, SX	3439-01-496-8545	6019-0060-P1	EA	1 EA	X	X	X
TUBING, (PVC, CLEAR, 1")	9330-01-408-6364	1325-0003-07	EA	2 EA	X	X	X
TUBING, SIL. 0.125ID, 54" L, BLACK	4710-01-476-9807	1342-0015-08	EA	1 EA	X	X	X
FUSE, CART. 12.0 AMP	5920-01-412-7761	1159-0257-P5	PG of 5	1 EA		X	X
FUSE, CART. 5.0 AMP, SLO-BLO	5920-01-408-9839	1159-0253-P5	PG of 5	1 EA		X	X
FUSE, CART. 2.0 AMP, SLO-BLO	OPEN PURCHASE	1159-0247-P5	PG of 5	1 EA	X		
KIT, DISPENSER, PASTE	3439-01-383-2016	6993-0152-P1	EA	1 EA			X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
CUBBY, PASTE DISPENSER	3439-01-383-1890	6019-0038-P1	EA	1 EA			X
BARREL ADAPTER, 10CC	4730-01-410-9726	1259-0091	EA	1 EA			X
DISPENSING NEEDLE (TIP, .013ID, OR.)	3439-01-400-1222	1125-0039-P5	PG of 5	1 EA			X
DISPENSING NEEDLE (TIP, .016ID, BL.)	3439-01-400-1221	1125-0023-P10	PG of 10	1 EA			X
DISPENSING NEEDLE (TIP, .020ID, PU.)	3439-01-400-1224	1125-0012-P10	PG of 10	1 EA			X
DISPENSING NEEDLE (TIP, .023ID, PI.)	3439-01-400-1226	00125-0021-P10	PG of 10	1 EA			X
LAPFLO HANDPIECE, (LF-15)	3439-01-354-3448	7013-0004-02-P1	EA	1 EA		X	X
TIP, LF, REFLOW FLAT	3439-00-417-7258	6000-0008	EA	1 EA		X	X
TIP, LF, REFLOW WIRE	3439-01-143-7743	6000-0025	EA	1 EA		X	X
PIK-VAC (PV-65)	4940-01-396-1874	7027-0001-P1	EA	1 EA			X
CUP, VACUUM, .195 DIA.	5340-01-406-9156	1121-0382	PG of 5	1 EA			X
CUP, VACUUM, .300 DIA.	5340-01-406-9157	1121-0383	PG of 5	1 EA			X
CUP, VACUUM, .500 DIA.	5340-01-406-9158	1121-0384-P5	PG of 5	1 EA			X
TIP, VAC, 45 BEND, .060ID, OL	5340-01-400-2102	1121-0413-P5	PG of 5	1 EA			X
REDI-RAK, TIP	3439-01-353-4357	6021-0007	EA	1 EA		X	X
RESISTWEEZ HANDPIECE, (TW-15)	3439-00-155-4597	7009-0005-P1	EA	1 EA		X	X
KIT, GUIDE BLOCK ASSY	3439-01-481-1797	6993-0105	EA	1 EA		X	X
SCREW, TIP MOUNTING	5305-01-399-3860	1405-0182	EA	2 EA		X	X
TIP, TW, FLAT	3439-01-408-1710	1121-0006-P2	PG of 2	1 EA		X	X
TIP, TW, TAPERED, FLAT, PAIR	3439-01-376-8027	1121-0301-P1	EA	1 EA			X
SOLDERING IRON, ELECTRIC (PS-80) OR	3439-01-465-4478	6010-0096-P1	EA	1 EA	X	X	X
SOLDERING IRON, ELECTRIC (PS-90)	OPEN PURCHASE	6010-0131-P1	EA	1 EA	X	X	X
TOOL STAND, PS-80 OR	3439-01-465-4480	6019-0050-P1	EA	1 EA	X	X	X
TOOL STAND, PS-90	OPEN PURCHASE	6019-0064	EA	1 EA	X	X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
SPONGE, TIP & TOOL STAND	7920-01-406-2958	4021-0008-P3	PG of 3	1 EA	X	X	X
SCREW, MACHINE (SET SCREW)	5305-01-343-6739	1348-0547-P10	PG of 10	1 EA	X	X	X
TIP, PS, 3/16" SHANK, 1/16" CHISEL	3439-01-380-8651	1121-0414	PG of 5	1 EA	X	X	X
TIP, PS, 3/16" SHANK, 1/32" CONICAL	3439-01-387-7688	1121-0336-P5	PG of 5	1 EA	X	X	X
TIP, PS, 3/16" SHANK, 1/8" CHISEL	3439-01-378-7161	1121-0337-P5	PG of 5	1 EA	X	X	X
TIP, PS, 3/16" SHANK, ANG MINI WAVE	6515-01-529-8701	1121-0610-P5	PG of 5	1 EA	X	X	X
TIP, PS, FLAT BLADE, 0.4	3439-01-376-8025	1121-0305	EA	1 EA			X
TIP, PS, SOT, 0.063 X 0.12	3439-01-376-8023	1121-0304-P1	EA	1 EA			X
TIP, PS, .0093 X 0.08, SM CHIP COMP.	3439-01-353-4373	1121-0302-P1	EA	1 EA			X
TIP, PS, .14 X .08, LG CHIP COMP.	3439-01-353-4374	1121-0303-P1	EA	1 EA			X
TIP, PS, BENT CONICAL, OR	OPEN PURCHASE	1121-0526-P5	PG of 5	1 EA			X
TIP, PS, SHARP BENT CONICAL, 1/64"	OPEN PURCHASE	1121-0830-P5	PG of 5	1 EA			X
TIP, PS, 3/32" CHISEL, OR	3439-01-393-3029	1121-0360	PG of 5	1 EA			X
TIP, PS, 3/32" CHISEL, EXT REACH	3439-01-500-0248	1121-0529-P5	PG of 5	1 EA			X
TIP, PS, SINGLE SIDED CHISEL OR	3439-01-400-1289	1121-0406-P5	PG of 5	1 EA	X	X	X
TIP, PS, SINGLE SIDED CSL EXT REACH	3439-01-511-1065	1121-0532-P5	PG of 5	1 EA	X	X	X
TIP, PS, MINI WAVE	OPEN PURCHASE	1121-0490-P5	PG of 5	1 EA	X	X	X
TIP, PS, TUNNEL, SOIC14	3439-01-353-4367	1121-0391-P1	EA	1 EA			X
TIP, PS, TUNNEL, SOLIC20	3439-01-353-4370	1121-0394-P1	EA	1 EA			X
SWITCH, FOOT (FOOT PEDAL)	5930-01-301-3563	6008-0115	EA	1 EA		X	X
STRIPTWEEZ HANDPIECE, (TS-15)	5130-01-399-1399	7012-0002-P1	EA	1 EA		X	X
KIT, GUIDE BLOCK	3439-01-481-1797	6993-0105	EA	1 EA		X	X
SCREW, TIP MOUNTING	5305-01-399-3862	1405-0106	EA	4 EA		X	X
THERMOJET, (TJ-70)	3439-01-399-4906	7023-0002-P1	EA	1 EA	X	X	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
DISCONNECT, QUICK, MALE	5935-01-393-3036	1259-0087	EA	1 EA	X	X	X
HOLDER TUBE/WIRE, GRY PK6	4730-01-398-8488	1321-0085-01-P6	PG of 6	1 PG	X	X	X
SCREW, MACHINE (SET SCREW)	5305-01-343-6739	1348-0547-P10	PG of 10	1 EA	X	X	X
TIP, TJ, DBL, .17, BENT, SOIC	3439-01-383-1859	1121-0330-P1	EA	1 EA			X
TIP, TJ, FLAT END, .24 X .074	3439-01-380-8934	1121-0371-P1	EA	1 EA			X
TIP, TJ, SINGLE, CURVED	3439-01-398-2746	1121-0338-P1	EA	1 EA	X	X	X
TIP, TJ, SINGLE, STRAIGHT	3439-01-380-8853	1121-0366-P1	EA	1 EA			X
TOOL STAND, SX	3439-01-496-8545	6019-0060-P1	EA	1 EA		X	X
TUBING, SIL. 0.125ID, 54" L, BLACK	4710-01-476-9807	1342-0015-08	EA	1 EA	X	X	X
THERMOPIK (TP-65)	3439-01-380-8913	7024-0001-P1	EA	1 EA			X
DISCONNECT, QUICK, MALE	5935-01-393-3036	1259-0087	EA	1 EA			X
HOLDER TUBE/WIRE, GRY (PK6)	4730-01-398-8488	1321-0085-01-P6	PG of 6	1 EA			X
SCREW, MACHINE (SET SCREW)	5305-01-343-6739	1348-0547-P10	PG of 10	1 EA			X
TIP, TP, FLATPACK TIP, .66 X .90 ID	3439-01-353-4359	1121-0322-002	EA	1 EA			X
TOOL STAND, SX	3439-01-496-8545	6019-0060-P1	EA	1 EA			X
TUBING, SIL., 0.125ID, 54" L, BLACK	4710-01-476-9807	1342-0015-08	EA	1 EA			X
THERMOTWEEZ (TT-65)	3439-01-381-6323	7025-0001-P1	EA	1 EA			X
SCREW, MACHINE (SET SCREW)	5305-01-343-6739	1348-0547-P10	PG of 10	2 EA			X
TIP, TT, ANGLED CHIP 0.10"	OPEN PURCHASE	1121-0436-P1	EA	1 EA			X
TIP, TT, ANGLED CONICAL 1/64"	3439-01-457-8626	1121-0517-P1	PR	1 PR			X
TIP, TT/PS, 0.50", PR	3439-01-457-8629	1121-0473-P1	PR	1 PR			X
TIP, TT, .26 X .26, PR	3439-01-399-4904	1121-0417-P1	EA	1 EA			X
TIP, TT, .35 X .25, LCCC-24, PR	3439-01-399-4143	1121-0452-P1	EA	1 EA			X
TIP, TT, .27 X .27, PLCC-20, PR	3439-01-383-1671	1121-0316	EA	1 EA			X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	Portable MBT 250	Mini PRC-2000 TH	Micro PRC-2000 SMT
TIP, TT, .37 X .37, PLCC-28, PR	3439-01-376-8040	1121-0317	EA	1 EA			X
TIP, TT, .40 X .35, PR	3439-01-399-4905	1121-0425-P1	EA	1 EA			X
TIP, TT, .57 X .57, PLCC-44, PR	3439-01-386-6118	1121-0318-P1	EA	1 EA			X
TIP, TT, .85 X .85, LCCC-132, PR	3439-01-399-4142	1121-0455-P1	EA	1 EA			X
TIP, TT, CHIP COMP., .16W, PR	3439-01-381-6215	1121-0399-P1	EA	1 EA			X
TIP, TT, .70 SOJ/SIMM, PR	3439-01-376-8028	1121-0416-P1	EA	1 EA			X
TOOL STAND, TT	3439-01-381-6124	6019-0046	EA	1 EA			X
TOOL, TIP ALIGNMENT (TT-65)	3439-01-408-0331	1100-0234	EA	1 EA			X
SIGN, ESD CAUTION	9905-01-342-3044	3870-1	EA	1 EA		X	X
TOOL BOX, PORTABLE	5140-00-319-5079	520	EA	1 EA		X	X
WISE, VACUUM BASE	5120-01-488-5048	381	EA	1 EA	X		
WISE, MULTIPOSITION	5120-00-991-1907	301	EA	1 EA		X	X
WORK STATION KIT, ELECTROSTATIC	4940-01-168-2044	8501	EA	1 EA	X		
WORK SURFACE, STATIC (3M) 2" X 4"	5920-01-491-3495	8353	EA	1 EA		X	X
CORD, GROUNDING (3M)	5999-01-491-7014	2360	EA	1 EA		X	X
MONITOR, CONTINUOUS, ESD (3M)	6625-01-491-0711	724	EA	1 EA		X	X
WRIST STRAP, GROUNDING (3M)	5920-01-491-3509	4720	EA	1 EA		X	X

4. AN/USM-646 (V) Test Station

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	MTR Workstation
5100DS, TEST SET, SEMICON.	6625-01-325-3672	5100DS/99-0312	EA	1 EA	X
ADAPTER, ELECTRICAL (UECA)	5935-01-393-9609	98-0086	EA	1 EA	X
CABLE, 40 CONDUCTOR	6150-01-410-8915	98-0071	EA	1 EA	X
CABLE, 64 CONDUCTOR	6150-01-410-8909	98-0072	EA	1 EA	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	MTR Workstation
CABLE, 20 PIN TEST CLIP	5995-01-409-1539	98-0025	EA	1 EA	X
CABLE, 40 PIN TEST CLIP	6150-01-431-5098	98-0026	EA	1 EA	X
CABLE ASSEMBLY, POWER 115V	6150-01-252-0979	535	EA	1 EA	X
CABLE ASSEMBLY, GPIB	6150-01-391-2045	553577-3	EA	1 EA	X
CABLE, BLACK COMMON CLIP, 36"	6625-01-342-0752	98-0043	EA	1 EA	X
CASE, CARRY, 5100DS	5895-01-415-7810	98-0060	EA	1 EA	X
CIRCUIT CARD, GPIB AT (ISA) BUS	7050-01-268-4323	64667/776113-01	EA	1 EA	X
CIRCUIT CARD, FRONT END ADAPTER	5998-01-408-8675	06-3046	EA	1 EA	X
HUNTRON PROBES SET	6625-01-172-7860	110012	EA	1 EA	X
IC TEST CLIP, .300 8PIN	6625-01-408-5482	07-1274	EA	1 EA	X
IC TEST CLIP, .300 14PIN	6625-01-408-5486	07-1275	EA	1 EA	X
IC TEST CLIP, .300 16PIN	6625-01-408-5488	07-1276	EA	1 EA	X
IC TEST CLIP, .300 18PIN	6625-01-408-5489	07-1277	EA	1 EA	X
IC TEST CLIP, .300 20PIN	6625-01-408-5490	07-1278	EA	1 EA	X
IC TEST CLIP, .300 22PIN	6625-01-408-5484	07-1286	EA	1 EA	X
IC TEST CLIP, .300 24PIN	6625-01-408-5487	07-1287	EA	1 EA	X
IC TEST CLIP, .300 28PIN	6625-01-408-4920	07-1288	EA	1 EA	X
IC TEST CLIP, .600 22PIN (WIDE)	6625-01-417-6776	07-1279	EA	1 EA	X
IC TEST CLIP, .600 24PIN (WIDE)	6625-01-417-6775	07-1280	EA	1 EA	X
IC TEST CLIP, .600 28PIN (WIDE)	6625-01-417-6777	07-1281	EA	1 EA	X
IC TEST CLIP, .600 40PIN (WIDE)	6625-01-408-5485	07-1283	EA	1 EA	X
JACK, TIP, RED, BANANA	5935-00-726-9456	1509-102	EA	1 EA	X
JACK, TIP, BLACK, BANANA	5935-00-729-5559	1509-103	EA	1 EA	X
JUMPER, 10 KOHM RESISTOR	5905-01-409-1923	98-0028	EA	1 EA	X
WORK SURFACE, STATIC (3M)	5920-01-491-3495	8343	EA	1 EA	X
CORD, GROUNDING (3M)	5999-01-491-7014	2360	EA	1 EA	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	MTR Workstation
MONITOR, CONTINUOUS, ESD	6625-01-491-0711	724	EA	1 EA	X
WRIST STRAP, GROUNDING	5920-01-491-3509	4720	EA	1 EA	X
JUMPER, 1 KOHM RESISTOR	5905-01-408-6765	98-0029	EA	1 EA	X
WINPEDAL	NAVSEA PROVIDED		EA	1 EA	X
CONTROLLER	NAVSEA PROVIDED		EA	1 EA	X
MONITOR	NAVSEA PROVIDED		EA	1 EA	X

5. AN/USM-674 (V) Test Station

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	MTR Workstation
LEAD SET, TEST (PROBES)	6625-01-172-7860	Y8140A	EA	1 EA	X
IC TEST CLIP, .300 8PIN	6625-01-408-5482	07-1274	EA	1 EA	X
IC TEST CLIP, .300 14PIN	6625-01-408-5486	07-1275	EA	1 EA	X
IC TEST CLIP, .300 16PIN	6625-01-408-5488	07-1276	EA	1 EA	X
IC TEST CLIP, .300 18PIN	6625-01-408-5489	07-1277	EA	1 EA	X
IC TEST CLIP, .300 20PIN	6625-01-408-5490	07-1278	EA	1 EA	X
IC TEST CLIP, .300 22PIN	6625-01-408-5484	07-1286	EA	1 EA	X
IC TEST CLIP, .300 24PIN	6625-01-408-5487	07-1287	EA	1 EA	X
IC TEST CLIP, .300 28PIN	6625-01-408-4920	07-1288	EA	1 EA	X
IC TEST CLIP, .600 22PIN (WIDE)	6625-01-417-6776	07-1279	EA	1 EA	X
IC TEST CLIP, .600 24PIN (WIDE)	6625-01-417-6775	07-1280	EA	1 EA	X
IC TEST CLIP, .600 28PIN (WIDE)	6625-01-417-6777	07-1281	EA	1 EA	X
IC TEST CLIP, .600 40PIN (WIDE)	6625-01-408-5485	07-1283	EA	1 EA	X
JUMPER, 10 KOHM RESISTOR	5905-01-409-1923	98-0028	EA	1 EA	X
JUMPER, 1 KOHM RESISTOR	5905-01-408-6765	98-0029	EA	1 EA	X
FOOTSWITCH	5930-00-061-2008	T-91-S	EA	1 EA	X

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	MTR Workstation
TEST CLIP, LEAD (BLUE)	6625-01-342-5050	98-0036	EA	1 EA	X
TEST CLIP, LEAD (BLACK)	6625-01-342-0752	601W-36 BLACK	EA	1 EA	X
PARALLEL CABLE (IEEE 1284)	6150-01-497-2210	98-0230	EA	1 EA	X
CABLE, USB (6 FT)		98-0481	EA	1 EA	X
ADAPTER, ELECTRICAL (UECA)	5935-01-393-9609	98-0086	EA	1 EA	X
CABLE, 64 CONDUCTOR	6150-01-410-8909	98-0072	EA	1 EA	X
RIBBON CABLE, 40 PIN	6150-01-497-0649	98-0102	EA	1 EA	X
RIBBON CABLE, 20 PIN	6150-01-497-0643	98-0103	EA	1 EA	X
STRAP, SCANNER	5975-01-499-9308	98-0281	EA	1 EA	X
CABLE, TRIPLE BNC W/FERRITE	6150-01-497-0650	98-0282	EA	1 EA	X
WORK SURFACE, STATIC (3M)	5920-01-491-3495	8343	EA	1 EA	X
CORD, GROUNDING (3M)	5999-01-491-7014	2360	EA	1 EA	X
MONITOR, CONTINUOUS, ESD	6625-01-491-0711	724	EA	1 EA	X
WRIST STRAP, GROUNDING	5920-01-491-3509	4720	EA	1 EA	X
CABLE, RJ45 (PROTRACK/SCANNER)	6150-01-497-0652	98-0283	EA	1 EA	X
ANALYZER, PROTRACK	NAVSEA PROVIDED		EA	1 EA	X
SCANNER, SEMICONDUCTOR	NAVSEA PROVIDED		EA	1 EA	X
XKEY FOOTPEDAL (3 POSITION)	NAVSEA PROVIDED	XF-10-US	EA	1 EA	X
CONTROLLER	NAVSEA PROVIDED		EA	1 EA	X
MONITOR	NAVSEA PROVIDED		EA	1 EA	X
UNINTERRUPTIBLE POWER SUPPLY	NAVSEA PROVIDED		EA	1 EA	X

6. Optional MTR Test Equipment Accessories

NOMENCLATURE	NSN	P/N	U/I	CERT QTY	MTR Workstation
PRINTER	NAVSEA PROVIDED		EA	1 EA	X
HSR410, SWITCHER	6625-01-257-7235	HSR410	EA	1 EA	X
CABLE ASSEMBLY (PWR/CLK)	5995-01-341-0919	98-0031	EA	1 EA	X
CABLE ASSEMBLY, SPEC 16 CONN	5995-01-339-9673	98-0032	EA	1 EA	X
CABLE ASSEMBLY, SPEC 40 PIN	5995-01-340-6485	98-0033	EA	1 EA	X
CABLE ASSEMBLY, (BANANA, RED/BLACK)	5995-01-340-6393	98-0035	EA	1 EA	X
LEAD, ELECTRICAL 4.4"	6150-01-342-1710	98-0020	EA	1 EA	X
LEAD, ELECTRICAL 6.4" (10K RESISTOR)	6150-01-342-1711	98-0085	EA	1 EA	X
TRACKER 2000 , TEST SET SEMICONDUCTOR	6625-01-258-2893	TRACKER2000A	EA	1 EA	X
GROUND CLIP, BLACK (2)	6625-01-295-0643	10-1088	EA	1 EA	X
HUNTRON PROBES (1)	6625-01-378-9969	10-1999	EA	1 EA	X
MICRO CLIP, BLUE (2)	6625-01-342-5050	98-0036	EA	1 EA	X
SHORTTRACK 90	6625-01-385-1588	99-0180	EA	1 EA	X
DEMO BOARD	5998-01-408-3404	423469	EA	1 EA	X

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Appendix G
2M/MTR REPAIR SITE CERTIFICATION

4790
Ser /
[date]

From: Commander, [Mid-Atlantic/Southwest] Regional Maintenance Center

To: Commanding Officer, [Site Certified]

Subj: **2M/MTR REPAIR SITE CERTIFICATION**

Ref: (a) NAVSEAINST 4790.17(Series)
(b) NAVSEA TE000-AA-MAN-010/2M

Encl: (1) Miniature/Microminiature (2M) Module Test and Repair (MTR) Site Certification Report
(2) 2M Miniature Repair Station Certificate
(3) 2M Microminiature Repair Station Certificate

1. As a result of the Miniature/Microminiature (2M) and Module Test and Repair (MTR) Site Certification conducted [recertification date, inclusive], [site certified] personnel, facilities, and equipment were found to be [capable/incapable] of providing quality 2M/MTR repairs per the requirements of references (a) and (b). Specifics of this certification are provided as enclosure (1).

2. 2M Station [#] is capable of providing 2M repairs at the miniature level as outlined in references (a) and (b). 2M Station [#] is capable of providing quality 2M repairs at the microminiature level as outlined in references (a) and (b). The 2M Portable Station is capable of providing quality 2M repairs at the miniature level as outlined in references (a) and (b). Test Station [#] {or Developer Station [#]} is capable of conducting MTR Electronic Fault Isolation as outlined in references (a) and (b). The new certification expiration date is [recertification date +18 months]. A departure brief was conducted with [Captain (CAPT) Smith, Commanding Officer (CO); Lieutenant (LT) Smith, Combat Systems Officer (CSO); Lieutenant (LT) Smith, Supply Officer (SUPPO); Chief Petty Officer (ETC) Smith, LCPO; and Petty Officer Third Class (ET3) Smith, 2M WCS]. 2M Repair Station Certificates are provided as enclosures (2) and (3).

OR

2. 2M Station [#] is downgraded and is capable of providing quality 2M repairs at the miniature level only. When the discrepancies noted in enclosure (1) have been corrected, contact POC identified below to schedule a follow-up certification. The new certification expiration date is [recertification date +18 months]. A departure brief was conducted with [Captain (CAPT) Smith, Commanding Officer (CO); Lieutenant (LT) Smith, Combat Systems Officer (CSO); Lieutenant (LT) Smith, Supply Officer (SUPPO); Chief Petty Officer (ETC) Smith, LCPO; and Petty Officer Third Class (ET3) Smith, 2M WCS]. 2M Repair Station Certificate is provided as enclosure (2).

OR

2. 2M Station [#] is not capable of providing quality 2M repairs. Test Station [#] is not capable of conducting MTR Electronic Fault Isolation. When discrepancies noted in enclosure (1) have been corrected, contact POC identified below to schedule a follow-up certification. A departure brief was conducted with [Captain (CAPT) Smith, Commanding Officer (CO); Lieutenant (LT) Smith, Combat Systems Officer (CSO); Lieutenant (LT) Smith, Supply Officer (SUPPO); Chief Petty Officer (ETC) Smith, LCPO; and Petty Officer Third Class (ET3) Smith, 2M WCS].

3. During the certification, [certifying activity] evaluated [site certified]'s 2M/MTR Program. [Site certified] has an effective 2M/MTR Program. The 2M/MTR workcenter is being utilized to its fullest potential. The 2M/MTR workcenter contributes significantly to the operational readiness and provides substantial cost savings to [site certified]. 2M/MTR Technician [Rank/Name] should be commended for his/her outstanding efforts [list others, as needed].

OR

3. During the certification, [certifying activity] evaluated [site certified]'s 2M/MTR Program. The 2M/MTR workcenter is not being effectively utilized. Effective use of the 2M/MTR workcenter will increase [site certified] operational readiness and provide substantial cost savings. Details on measuring program effectiveness and recommendations for improving [site certified]'s 2M/MTR Program are detailed in enclosure (1).

4. Our point of contact for additional information or assistance is [recertifier] at [phone number + ext], DSN [DSN number], or email [name@xxx.mil].

/signed/
By direction

Copy to:
COMFLTFORCOM (N4344)
COMNAVAIRFOR (N4353)
COMSURFFORCOM (N604)
COMNAVSURFLANT (N601A)
NAVSURFWARCENDIV Crane (Code 6083)
NAVUNSEAWARCENDETFO Norfolk (Code 2504)
COMDT CG-642

2M/MTR REPAIR SITE CERTIFICATION
[ENCLOSURE]

1. Activity/UIC:
2. Date of Certification:
3. Certifying Activity: [Command, 2M/MTR Inspector or 2M/MTR Fleet Coordinator]
4. Arrival Brief:
5. List of 2M/MTR Technicians:

NAME	RATE	PRD	WORKCTR	CERT LVL	CARD NO.	CERT EXP

6. Inventoried authorized 2M/MTR equipment per (Appendix F) and verified operation per (Appendix L).

2M Equipment	Station #1	Station #2	Station #3	Station #4
Power Unit / Serial Number				
Microscope Type / Serial Number				
Preheater / Serial Number				
Light Source / Serial Number				
ESD Constant Monitor / Serial Number				
Space Location				
Work Center				

MTR Equipment	Station #1	Station #2	Station #3	Station #4
Controller / Serial Number				
Monitor / Serial Number				
Printer / Serial Number				
Huntron 5100DS / Serial Number				
Huntron 2000 / Serial Number				
Shortrack 90 / Serial Number				
Switcher 410 / Serial Number				
ESD Constant Monitor / Serial Number				

MTR Equipment	Station #1	Station #2	Station #3	Station #4
Uninterruptible Power Supply / Serial Number				
Space Location				
Work Center				

7. Discussed and evaluated the following proposed changes in tools, equipment, techniques, and 2M/MTR training curriculum.

8. Verified all equipment used for 2M/MTR are supported by an approved allowance list (APL/AEL).

9. Verified all equipment used for 2M/MTR included into the activity's preventive maintenance program.

10. Verified that this activity meets the minimum facility requirements for 2M Electronics Repair. (NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D, WP003 00, Facility Requirements).

11. Verified at least one copy of applicable 2M/MTR documents are at or near the 2M Workstation.

12. Verified that the 2M/MTR workcenter has all the materials required for ESD prevention and is following proper ESD procedures (mat, wrist straps, and static-shielded bags).

13. Verified that the 2M/MTR maintenance actions and piece parts usage are being documented in the MTRTS and verified that the Supply Department personnel are fully aware of the policies and procedures contained in COMFLTFORCOMINST 4790.3 (JFMM), and NAVSUP Publication 485, Afloat Supply Procedures.

14. The following summarizes the findings of this certification:

a. Major Deficiencies:

b. Minor Deficiencies:

c. General Comments:

(1) CCA/EMs screened through 2M/MTR:	0
(2) CASREPS averted:	0
(3) 2M repaired CCA/EM cost avoidance:	\$0.00
(4) Total number of CCA/EMs purchased:	0
(5) Gold Disk supported CCA/EMs purchased:	0
(6) Gold Disk supported CCA/EMs requisitioned as CASREPs:	0
(7) Potential cost avoidance through 2M/MTR:	\$0.00
(8) Rate of Effectiveness: (a/a+d)	XX%

d. Recommendations:

15. As a result of this certification, [Site Certified] personnel, and stations were found [capable/incapable] of accomplishing miniature and microminiature repair in accordance with NAVSEA TE000-AA-MAN 010/2M / NAVAIR SE-004-PQS-000 / MARINE CORPS TI 5895-OD/1.

16. Departure Brief:

/signed/

[recertifier name]

2M/MTR Inspector

Appendix H
2M/MTR TRAINING SITE CERTIFICATION

4790
Ser /
[date]

From: Commander, Naval Sea Systems Command

To: Commanding Officer, [Site Certified]

Subj: **2M/MTR TRAINING SITE CERTIFICATION**

Ref: (a) COMNAVSEASYS COMINST 4790.17(Series)
(b) NAVSEA TE000-AA-MAN-010/2M

Encl: (1) 2M/MTR Site Certification Report
(2) MTR Training Site Certification Report
(3) 2M/MTR Training Site Certificate

1. As a result of the Miniature/Microminiature (2M) and Module Test and Repair (MTR) Training Site Certification conducted [recertification date, inclusive], [site certified] personnel, facilities, and equipment were found to be [capable/incapable] of providing instruction leading to the accomplishment of 2M Miniature Repair, 2M Microminiature Repair, 2M Technician Recertifier, 2M Instructor, and 2M Module Test and Repair per the requirements of references (a) and (b). Specifics of this certification are provided as enclosures (1 and 2).

2. The new certification expiration date is [recertification date +12 months]. The 2M/MTR Training Site Certificate is provided as enclosure (3).

3. Our point of contact for additional information or assistance is [recertifier] at [phone number + ext], DSN [DSN number], or email [name@xxx.mil].

/signed/
By direction

Copy To:
CSCS Dahlgren (N7)
CNATT Pensacola (N7) (For CNATTU Whidbey Island and CNATT Det Atsugi only)
COMDT CG-642 (for TC Yorktown only)

2M TRAINING SITE CERTIFICATION
[ENCLOSURE (1)]

1. Activity/UIC:

2. Date of Certification:

3. Certification Activity:

4. Arrival Brief:

5. List of 2M Instructors [Include personnel in an "Instructor-in-Training" status, exclude personnel not directly involved with 2M]:

NAME	RATE	PRD	WORKCTR	CERT LVL	CARD NO.	CERT EXP

6. Inventoried authorized 2M equipment per (Appendix F) and verified operation per (Appendix L).

2M Equipment	Station #1	Station #2	Station #3	Station #4
Power Unit / Serial Number				
Microscope Type / Serial Number				
Preheater / Serial Number				
Light Source / Serial Number				
ESD Constant Monitor / Serial Number				
Space Location				
Work Center				

7. Discussed and evaluated the following proposed changes in tools, equipment, techniques, and 2M training curriculum.

8. Verified an ample supply of course identified circuit cards (A-100-0072-001, A-100-0072-002, A-100-0073-001, A-100-0073-002) and flex print (A-100-0073-003), terminals, eyelets, solder cups, components, consumables, etc. are in each classroom.

9. Verified that this activity meets the minimum facility requirements for 2M Electronics Repair. (NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D, WP003 00 Facility Requirements).

10. Verified at least one copy of applicable 2M documents are in the possession of the 2M Course Supervisor.

11. Verified appropriate instructional materials are current and available (administrator's guide, lesson plan, performance tests, testing plan, trainee guide, training course control document, and audiovisual aids) for the Miniature Electronics Repair Course, A-100-0072, the Microminiature Electronics Repair Course, A-100-0073, the 2M Instructor Pipeline Course, A-100-0074, and if applicable the 2M Technician Recertifier Course, A-100-0058, and the 2M Technician Recertifier Requalification Course A-100-0144. List discrepancies and projected corrective action anticipated.

12. Record of training since the last certification [date]:

Course Results	A-100-0072	A-100-0073	A-100-0144	A-100-0058	A-100-0074
Training quotas available:					
Quotas utilized / (%):					
Technicians certified / (%):					
Attrition Rate (%)					

13. Verified each classroom meets applicable training capability requirements for miniature repair and/or microminiature repair training.

14. 2M Instructor evaluations:

NAME	COURSE	TOPIC	EVALUATOR	CRITIQUE COMMENTS

15. The following summarizes the findings of this certification:

- a. Major Deficiencies:
- b. Minor Deficiencies:
- c. General Comments:
- d. Recommendations:

16. As a result of this certification, [training site certified] personnel, facilities, and equipment were found [capable/incapable] of providing instruction leading to the accomplishment of miniature and microminiature repair, 2M Technician Recertifier, and 2M Instructor training.

17. Departure Brief:

/signed/

[recertifier name]

[2M Certification Agent // 2M/MTR Fleet Coordinator]

Original To: NAVSEA (SEA 04RP2)

Copy To: CSCS Dahlgren (N7)

CNATT Pensacola (N7) (For CNATTU Whidbey Island and CNATT Det Atsugi only)

COMDT CG-642 (for TC Yorktown only)

MTR TRAINING SITE CERTIFICATION
[ENCLOSURE (2)]

1. Activity/UIC:
2. Date of Certification:
3. Certification Activity:
4. Arrival Brief:
5. List of MTR Instructors [Include personnel in an "Instructor-in-Training" status, exclude personnel not directly involved with MTR training]:

NAME	RATE	PRD	WORKCTR	CERT LVL	CARD NO.	CERT EXP

6. Inventoried authorized MTR equipment per (Appendix F) and verified operation per (Appendix L).

MTR Equipment	Station #1	Station #2	Station #3	Station #4
Controller / Serial Number				
Monitor / Serial Number				
Printer / Serial Number				
Huntron 5100DS / Serial Number				
Huntron 2000 / Serial Number				
Shortrack 90 / Serial Number				
Switcher 410 / Serial Number				
ESD Constant Monitor / Serial Number				
Uninterruptible Power Supply / Serial Number				
Space Location				
Work Center				

7. Discussed and evaluated the following proposed changes in MTR Operating Software, MTRTS Administration, test equipment, fault isolation techniques, and MTR training curriculum.
8. N/A.
9. N/A.

10. Verified at least one copy of applicable MTR documents are in the possession of the 2M/MTR Course Supervisor.

11. Verified appropriate instructional materials are current and available [Training Project Plan (TPP), Course Training Task List (CTTL), Curriculum Outline Of Instruction (COI), Learning Objectives, Course Master Schedule (CMS), Training Course Control Document (TCCD), Lesson Plan, Trainee Guide, MTR performance tests, pre-faulted electronic modules, and audiovisual aids] for the Module Test and Repair Equipment Operator Course, A-100-0076. List discrepancies and projected corrective action anticipated.

12. Record of training since the last certification [date]:

Course Results	A-100-0076				
Training quotas available:					
Quotas utilized / (%):					
Technicians certified / (%):					
Attrition Rate (%)					

13. Verified each classroom meets applicable training capability requirements for MTR repair.

14. MTR Instructor evaluations:

NAME	COURSE	TOPIC	EVALUATOR	CRITIQUE COMMENTS

15. The following summarizes the findings of this certification:

- a. Major Deficiencies:
- b. Minor Deficiencies:
- c. General Comments:
- d. Recommendations:

16. As a result of this certification, [training site certified] personnel, facilities, and equipment were found [capable/incapable] of providing instruction leading to the accomplishment of MTR equipment operator training.

17. Departure Brief:

/signed/

[recertifier name]
[MTR Certification Agent // 2M/MTR Fleet Coordinator]

Original To: NAVSEA (SEA 04RP2)
Copy To: CSCS Dahlgren (N7)
CNATT Pensacola (N7) (For CNATTU Whidbey Island and CNATT Det Atsugi only)
COMDT CG-642 (for TC Yorktown only)

Appendix I
2M/MTR CERTIFYING SITE CERTIFICATION

4790
Ser /
[date]

From: Commander, Naval Sea Systems Command

OR

From: Commander, [Mid-Atlantic/Southwest] Regional Maintenance Center

To: Commanding Officer, [Site Certified]

Subj: **2M/MTR CERTIFYING SITE CERTIFICATION**

Ref: (a) NAVSEAINST 4790.17(Series)
(b) NAVSEA TE000-AA-MAN-010/2M

Encl: (1) 2M/MTR Certifying Site Certification Report
(2) 2M/MTR Certifying Site Certificate

1. As a result of the Miniature/Microminiature (2M) and Module Test and Repair (MTR) Certifying Site Certification conducted [recertification date, inclusive], [site certified] personnel, facilities, and equipment were found to be [capable/incapable] of conducting 2M/MTR site reviews and 2M/MTR personnel recertifications per the requirements of references (a) and (b). Specifics of this certification are provided as enclosure (1).

2. The new certification expiration date is [recertification date +12 months]. The 2M/MTR Certifying Site Certificate is provided as enclosure (2).

3. Our point of contact for additional information or assistance is [recertifier] at [phone number + ext], DSN [DSN number], or email [name@xxx.mil].

/signed/
By direction

Copy to:
COMNAVAIRSYSCOM (6.7) (AMMT only)
COMFLTFORCOM (N4344)
COMNAVAIRFOR (N4353)
COMSURFFORCOM (N604)
COMNAVSURFLANT (N601A)

2M/MTR CERTIFYING SITE CERTIFICATION
[ENCLOSURE]

1. Activity/UIC:

2. Date of Certification:

3. Certifying Activity: [2M/MTR Fleet Coordinator or Certification Agent (CA)]

4. Arrival Brief:

5. List of [2M/MTR Inspectors, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluators]:

NAME	RATE	PRD	WORKCTR	CERT LVL	CARD NO.	CERT EXP

6. Inventoried authorized 2M/MTR equipment per (Appendix F) and verified operation per (Appendix L).

2M Equipment	Station #1	Station #2	Station #3	Station #4
Power Unit / Serial Number				
Microscope Type / Serial Number				
Preheater / Serial Number				
Light Source / Serial Number				
ESD Constant Monitor / Serial Number				
Space Location				
Work Center				

MTR Equipment	Station #1	Station #2	Station #3	Station #4
Controller / Serial Number				
Monitor / Serial Number				
Printer / Serial Number				
Huntron 5100DS / Serial Number				
Huntron 2000 / Serial Number				
Shortrack 90 / Serial Number				
Switcher 410 / Serial Number				
ESD Constant Monitor / Serial Number				

MTR Equipment	Station #1	Station #2	Station #3	Station #4
Uninterruptible Power Supply / Serial Number				
Space Location				
Work Center				

7. Discussed and evaluated the following proposed changes in tools, equipment, techniques, and 2M and MTR training curriculum.

8. Verified an ample supply of practice circuit cards, terminals, eyelets, solder cups, components, consumables, etc., to conduct 2M/MTR technician recertifications.

9. Verified that this activity meets the minimum facility requirements for 2M Electronics Repair. (NAVAIR 01-1A-23 / NAVSEA SE004-AK-TRS-010/2M / MARINE CORPS TM 5895-45/1D, WP003 00 Facility Requirements).

10. Verified at least one paper copy of the 2M Tech Manual for each recertification station and one paper or electronic copy the PRC-2000 manual in the laboratory and all applicable 2M/MTR documents are in the possession of the 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator.

11. Verified 2M/MTR Inspectors and 2M/MTR Fleet Coordinators are reporting completion of 2M/MTR Repair Site certifications in the 2M/MTR database and reporting 2M/MTR personnel recertifications in the 2M/MTR database or via 2M/MTR Personnel Certification Record form (Appendix B).

12. Verified completion of locally generated JQR for each 2M/MTR Inspector and/or 2M/MTR Fleet Coordinator.

13. Reviewed the certification status of all of the 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator 2M/MTR sites.

14. Observed the 2M/MTR Inspector, 2M/MTR Fleet Coordinator, or AMMT 2M Evaluator [Name] satisfactorily conduct a 2M/MTR Repair Site Certification [at/aboard Activity].

15. The following summarizes the findings of this certification:

- a. Major Deficiencies:
- b. Minor Deficiencies:
- c. General Comments:
- d. Recommendations:

16. As a result of this certification, the [2M/MTR Inspector/2M/MTR Fleet Coordinator or AIR TYCOM 2M Evaluator] was found to be [capable/incapable] of conducting 2M/MTR site Certifications and 2M/MTR personnel recertifications in accordance with NAVSEA TE000-AA-MAN 010/2M or NAVAIR SE-004-PQS-000 or MARCOR TI 5895-OD/1.

17. Departure Brief:

/signed/

[recertifier name]

[2M Certification Agent / MTR Certification Agent //
2M/MTR Fleet Coordinator]

Original To: NAVSEA (SEA 04RP2)

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Appendix J
2M/MTR INSPECTOR JQR

1. Microminiature certified.

(SIGNATURE AND DATE)

2. 2M Technician Recertifier course (A-100-0058) completed
or prior 2M Instructor/2M Technician Recertifier.

(SIGNATURE AND DATE)

3. Module Test and Repair Equipment Operator (A-100-0076)
completed.

(SIGNATURE AND DATE)

4. Complete MTR recertification performance test with MTR
CA.

(SIGNATURE AND DATE)

5. Assist a certified 2M/MTR Inspector in four (4) site certifications to include:

a. Conduct arrival briefs and a departure briefs.

(SIGNATURE AND DATE)

b. Requisitions vs. MTRTS screening for the last four calendar quarters.

(SIGNATURE AND DATE)

c. Complete inventory of 2M soldering stations inclusive of applicable 2M AEL.

(SIGNATURE AND DATE)

d. Complete inventory of MTR equipment inclusive of applicable NUWC MTR checklist, include
model numbers.

(SIGNATURE AND DATE)

e. Complete operability test of the 2M soldering station(s) IAW applicable PMS procedures.

(SIGNATURE AND DATE)

f. Complete MTR operability and meter test of the MTR equipment as outlined in the NUWC
checklist or IAW applicable PMS procedures.

(SIGNATURE AND DATE)

g. Accumulate all 2M/MTR technician data to include PRD, last four of SSN, rate, CERT level, CERT expiration date, and workcenter. Verify EDVR section 8 and EDVR section 7 for 2M Basic Allowance.

(SIGNATURE AND DATE)

h. Provide MTRTS utilization training to ship's company as needed.

(SIGNATURE AND DATE)

i. Verify appropriate 2M/MTR/Piece Parts APL/AELs are installed onboard.

(SIGNATURE AND DATE)

j. Verify 2M/MTR space environmental requirements.

(SIGNATURE AND DATE)

k. Verify sufficient number of electrical outlets.

(SIGNATURE AND DATE)

l. Verify all applicable instructions and technical manuals are locally available.

(SIGNATURE AND DATE)

m. Conduct operational test of ESD Constant Monitoring System IAW PMS.

(SIGNATURE AND DATE)

n. Ensure 2M/MTR stations are properly grounded and all ESD precautions are being followed.

(SIGNATURE AND DATE)

o. Provide training to supply personnel on JFMM requirements, NAVSUP P485 procedures, and NAVSUP P484 procedures (Repackaging of RFI DLR'S). Obtain requisition data.

(SIGNATURE AND DATE)

p. Confirm calibration of pressure/vacuum gauge.

(SIGNATURE AND DATE)

q. Verify adequate storage and security of tools, workstation surface minimum of 24"x36" and adequate legroom for technician.

(SIGNATURE AND DATE)

6. Obtain passwords from NSW Crane 2M Webmaster and log onto NSW Crane 2M/MTR database (x4).

(SIGNATURE AND DATE)

a. Verify current MTRTS repair data was submitted (x4).

(SIGNATURE AND DATE)

b. Insert/update technician data (x4) (2M and MTR).

(SIGNATURE AND DATE)

c. Insert/update equipment data (x4) (2M and MTR).

(SIGNATURE AND DATE)

d. Insert/update command certification date update page (x4) (2M and MTR).

(SIGNATURE AND DATE)

e. Perform various 2M/MTR database queries (x4).

(SIGNATURE AND DATE)

7. Evaluate 2M/MTR technician recertification projects in lab (three separate convenings).

(SIGNATURE AND DATE)

8. Update technician certification data in 2M/MTR database, issue recertification documents (x3).

(SIGNATURE AND DATE)

9. Paperwork familiarization.

a. Site certification/decertification paperwork submission.

(SIGNATURE AND DATE)

b. Tool redistribution sheet.

(SIGNATURE AND DATE)

10. Demonstrate proficiency in troubleshooting:

a. 2M soldering rework stations.

(SIGNATURE AND DATE)

b. MTR test station.

(SIGNATURE AND DATE)

11. Complete one site certification under the observation of a certified 2M/MTR Inspector, including updating the NSWC Crane 2M/MTR database and submit all Site Certification/Decertification documents to appropriate authority.

(SIGNATURE AND DATE)

(SIGNATURE AND DATE)

Final certifying signature: _____ Date _____
2M/MTR Fleet Coordinator

Copy to:
2M/MTR Fleet Coordinator
2M/MTR Inspector

Appendix K
2M/MTR FLEET COORDINATOR DESIGNATION

4790
Ser /
[date]

From: Commander, Naval Sea Systems Command

To: Commander, [Mid-Atlantic/Southwest] Regional Maintenance Center

Subj: **2M/MTR FLEET COORDINATOR**

Ref: (a) NAVSEAINST 4790.17(Series)
(b) NAVSEA TE000-AA-MAN-010/2M

1. Per references (a) and (b), [name] is certified to perform the duties of [Atlantic/Pacific] 2M/MTR Fleet Coordinator. Certification was conducted by [2M/MTR CA] on [date]. This certification expires [date].
2. Our point of contact for additional information or assistance is [name] at [phone number + ext], DSN [DSN number], or email [name@xxx.mil].

/signed/
By direction

Copy to:
NAVSURFWARCENDIV Crane (Code 6083)
NAVUNSEAWARCENDETFO Norfolk (Code 2504)

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Appendix L
2M/MTR EQUIPMENT OPERATION VERIFICATION

1. PRC-2000 / MBT-250

- Verify that PRC-2000 passes MRC A-1R (MIP 6652/001) or NAVAIR 17-600-193-6-2.
- Verify that MBT-250 passes MRC A-3R (MIP 6652/001) or NAVAIR 17-600-193-6-2.
- Verify proper operation of conductive handpieces and pulse heat function (PRC-2000).
- Verify proper operation of Minimate motor driven handpiece (MBT-250).
- Verify temperature setback feature is enabled. A setback time of 20 minutes is recommended to preserve handpiece heater and tip life (PRC-2000 and MBT-250).

2. ESD SYSTEM

- Verify that the ESD system employed passes MRC M-1 (MIP 6652/001) or NAVAIR 17-600-193-6-2.

3. MTR Station

- Verify AN/USM-674 passes MRC Q-2 (MIP 4911/003).
- Verify AN/USM-646 passes MRC Q-1 (MIP 4911/003).
- Verify that the MTR Station has the latest version of applicable software installed.

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Appendix M
2M/MTR CERTIFICATION ACTIVITY CODES

Air Force

Eielson AFB	GEIL	Spangdahlem AB	GSPA
Hurlburt Field AFB	GHUR	Whiteman AFB	GWHI
Sheppard AFB	GSHP		

AIMD

USS KITTY HAWK	CV63	NAS Atsugi	AATS
USS ENTERPRISE	CV65	NAS Brunswick	ABRU
USS NIMITZ	CV68	NAS Corpus Christi	ACOR
USS DWIGHT D EISENHOWER	CV69	NAS Diego Garcia	ADGA
USS CARL VINSON	CV70	NAS Fallon	AFAL
USS THEODORE ROOSEVELT	CV71	NAS Guantanamo Bay	AGIT
USS ABRAHAM LINCOLN	CV72	NAS JRB Fort Worth	AJFW
USS GEORGE WASHINGTON	CV73	NAS JRB New Orleans	AJNO
USS JOHN C STENNIS	CV74	NAS JRB Willow Grove	AJWG
USS HARRY S TRUMAN	CV75	NAS Jacksonville	AJAX
USS RONALD REAGAN	CV76	NAS Keflavik	AKEF
USS GEORGE H W BUSH	CV77	NAS Key West	AKWT
USS GERALD R FORD	CV78	NAS Kingsville	AKNG
USS TARAWA	LHA1	NAS Lemoore	ALEM
USS NASSAU	LHA4	NAS Meridian	AMER
USS PELELIU	LHA5	NAS Misawa	AMIS
USS WASP	LHD1	NAS Norfolk	ANOR
USS ESSEX	LHD2	NAS North Island	ANOI
USS KEARSARGE	LHD3	NAS Oceana	AOCE
USS BOXER	LHD4	NAS Pensacola	APEN
USS BATAAN	LHD5	NAS Sigonella	ASIG
USS BONHOMME RICHARD	LHD6	NAS Whidbey Island	AWHI
USS IWO JIMA	LHD7	NAVSTA Mayport	AMAY
USS MAKIN ISLAND	LHD8	NAVSTA Rota	AROT
USS FRANK CABLE	AS40	NAWC AD Patuxent River	APAX
COMSTRATCOMWINGONE	ACSC	NAWS Point Mugu	APMU
NAF Washington DC	AWDC		

AMMT

CNATRA	CNTA	COMNAVAIRPAC	APAC
COMNAVAIRFORES	CNAR	COMNAVAIRSYSCOM	CNAS
COMNAVAIRLANT	ALAN		

Certification Agent

NSWC Crane	CRTA	NUWC Det Norfolk	CRTB
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LANFLT

Norfolk	RNOV	Mayport	RMAF
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PACFLT

San Diego	RSDC	Pearl Harbor	RPHH
Everett	REVW	Yokosuka	RYOJ

<u>Marine Corps</u>			
HMX-1 Quantico	MHMX	MALS 29 New River	MA29
MALS 11 Miramar	MA11	MALS 31 Beaufort	MA31
MALS 12 Iwakuni	MA12	MALS 36 Futenma	MA36
MALS 13 Yuma	MA13	MALS 39 Camp Pendleton	MA39
MALS 14 Cherry Point	MA14	MALS 49 Steward ANG Base	MA49
MALS 16 Miramar	MA16	MALS SE Kaneohe Bay	MASE
MALS 26 New River	MA26		
<u>Fleet Readiness Centers</u>			
Cherry Point	NDCP	San Diego	NDNI
Jacksonville	NDJA		
<u>Training Commands</u>			
29 Palms	TR29	San Diego	TRSD
Atsugi	TRAT	Spangdahlem	TRSP
Davis-Monthan	TRDM	Whidbey Island	TRWH
Mayport	TRMA	Yokosuka	TRYO
Norfolk	TRNO	Yorktown	TRYT
Pearl Harbor	TRPH		
<u>TRF</u>			
Bangor	TFBA	Kings Bay	TFKB

Certification Card No.

- The first four characters will represent the activity performing the certification.
- The first numerical digit will identify the year the certification is performed.
- The following numerical digits will identify the type of certification issued in sequence.
 - 001-099 will represent 2M Technician Recertifiers and Instructors.
 - 100-499 will represent Miniature level.
 - 500-999 will represent the Microminiature level.

Example: FLNO0115. This sequence represents that MARMC issued this card in 2001 to the 15th person certified at the miniature level.

Appendix N
2M/MTR POINTS OF CONTACT

CNO Program Sponsor

Chief of Naval Operations
Logistics (OPNAV N43)
Room NC1-6
2000 Navy Pentagon
Washington D.C. 20350-2000

DSN 329-1678
COM (703) 601-1678

2M/MTR Program Manager

Commander
Naval Sea Systems Command
SEA-04RP2 197/4W-1638
1333 Isaac Hull Avenue
Washington D.C. 20376

DSN 326-3380
COM (202) 781-3380
EMAIL tom.ingram@navy.mil
WEB <http://www.navsea.navy.mil>

Coast Guard 2M/MTR Program Manager

Commandant (CG-642)
1900 Half St. SW
Washington D.C. 20593-0001

COM (202) 475-3621

Marine Corps 2M/MTR Program Management Office

Commanding General
Marine Corps Systems Command
Code PMM-161 (TMDE) CESS Directorate
2200 Lester Street
Quantico, VA 22134-6050

DSN 378-3248
COM (703) 432-3248
EMAIL john.finke@usmc.mil

2M/MTR Certification Agent

Commander
Crane Division, Naval Surface Warfare Center
Code 6083 Bldg 3330 North
300 Highway 361
Crane IN 47522-5001

DSN 482-1510
COM (812) 854-1510
EMAIL crane.2m.program@navy.mil
WEB <http://www.crane.navy.mil/2m>

Director (Code 2504)
NAVUNSEAWARCEN DET FEO Norfolk
St. Juliens Creek Annex
Building 169, Magazine Road
Portsmouth, VA 23702

DSN 386-0800
COM (757) 396-0800
EMAIL help@nor.nuwc.navy.mil
WEB <https://www.nor.nuwc.navy.mil/mtr>

2M/MTR Fleet Coordinators & AMMT 2M Evaluators

Atlantic Force Coordinator
Commander
Mid Atlantic Regional Maintenance Center
Code 222
9727 Avionics Loop, BLDG LF-18
Norfolk VA 23511-2124

DSN 646-3872 X1874
COM (757) 443-3872 X1874
WEB
<https://www.marmc.nmci.navy.mil/200/2MMTR/index.cfm>

2M/MTR Fleet Coordinators & AMMT 2M Evaluators

Pacific Force Coordinator

Commanding Officer
Southwest Regional Maintenance Center
ATTN: Code 222B.2 / 2M/MTR
3375 Senn Road, Suite 1
San Diego, CA 92136-5002

DSN 526-1346
COM (619) 556-1346
WEB <http://www.swrmc.navy.mil/>

Commander
Naval Air Forces
Code N4353
Box 357051
San Diego CA 92135-7051

DSN 735-1497
COM (619) 545-1497
WEB <http://www.airpac.navy.mil>

Commander
Naval Air Force Reserve
Code N422A2
4400 Dauphine Street
New Orleans LA 70146-5200

DSN 678-0233
COM (504) 678-0233

Commander
Naval Air Systems Command
Aircraft Controlling Custodian,
Bldg. 448, Suite 001A, AIR 5.0D,
47038 McLeod Road Unit 8
Patuxent River, MD 20670-1626

DSN 757-8285
COM (301) 757-8285

Certifying Sites

Southeast Regional Maintenance Center
Naval Station Massey Street
Bldg 1488
Mayport FL 32228

COM (904) 270-5126 X3505
DSN 960-5126 X3505
WEB <http://www.sermc.surfor.navy.mil/default.aspx>

Commanding Officer
ATTN Code 210 2M Recert Lab
PSNS & IMF Det Everett
2000 W. Marine View Drive
Everett WA 98207-0001

DSN 727-5405
COM (425) 304-5405

Pearl Harbor Naval Shipyard
Fleet Technical Support Code 280
ATTN: 2M/MTR Inspector, Code 280.2
1070 North Road, Bldg 146
Pearl Harbor, HI 96860

DSN (315) 473-0596
COM (808) 473-0596
WEB <http://www.phnsy.navy.mil/>

SRF JRMCC Yokosuka
Dept Head Code 190
2MMTR Inspector
PSC 473 Box 8
FPO AP 96349-0008

DSN 315-243-9978/3061
COM 011-8146-816-9978/3061

U.S. Navy Training Sites

Commanding Officer
CSCS Det Pearl Harbor
N753/2M
226 Lexington Blvd, Bldg 26, Ford Island
Pearl Harbor HI 96860-7600

DSN (315) 472-8881 X337/352
COM (808) 472-8881 X337/352

NAVSEA TE000-AA-MAN-010/2M
NAVAIR SE-004-PQS-000
MARCOR TI 5895-OD/1

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U.S. Navy Training Sites

Commanding Officer
CSCS Det Mayport
N3/2M
351 Baltimore Street Bldg 351
Naval Station Mayport, FL 32228-0147

DSN 960-5260 / 5243
COM (904) 270-5260 / 5243

Commanding Officer
CSCS Det East
N752/2M
9550 Farragut Avenue
Norfolk VA 23511-2790

DSN 564-1262 X3040
COM (757) 444-1262 X3040

Commanding Officer
CSCS Det West
N752/2M
3975 Norman Scott Rd., Suite 1
San Diego CA 92136-5588

DSN 526-8548
COM (619) 556-8548

CNATT Det Atsugi
2M Division
PSC 477 Box 31
FPO AP 96306

DSN (315) 264-3159
COM 011-81-3117-64-3159

Commanding Officer
CNATT Unit Whidbey Island
Attn: 2M/MTR
3665 North Princeton Street
Oak Harbor WA 98278-8000

DSN 820-2733
COM (360) 257-2733

Commanding Officer
FRC East
PSC Box 8021 Code 6.2.3.4
Marine Corps Air Station
Cherry Point NC 28533-8021

DSN 451-7415
COM (252) 464-7415
WEB <http://www.nadepcp.navy.mil>

Commanding Officer
FRC Southeast
Code 62429
Naval Air Station
Jacksonville FL 32212-0016

DSN 942-4356
COM (904) 542-4356
WEB

Commanding Officer
FRC Southwest
Code 936
NAS North Island
PO Box 357058
San Diego CA 92135-7058

DSN 735-7950
COM (619) 545-7950
WEB <http://www.frsw.navy.mil/frsw/>

U.S. Coast Guard Training Site

Commanding Officer
USCG TRACEN YORKTOWN (TEW)
End of State Route 238
Yorktown VA 23690-5000

COM (757) 856-2287
WEB <http://www.uscg.mil/tcyorktown/tew/et.shtm>

**NAVSEA TE000-AA-MAN-010/2M
NAVAIR SE-004-PQS-000
MARCOR TI 5895-OD/1**

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U.S. Marine Corps Training Site

Commanding Officer
ATTN: MM/ATE Chief Instructor
MCCES Training Command Box 788251
Twentynine Palms, CA 92278-8251

DSN 230-7730 or 8775
COM (760) 830-7730 or 8775

U.S. Air Force Training Sites

372 TRS/DET 11
3295 South 5th Street
Davis Monthan AFB AZ 85707-3914

DSN 228-3520
COM (520) 228-4224
WEB <http://www.dm.af.mil/det11/2m/>

372 TRS/DET 17
Unit 3730
Spangdahlem Air Base
APO AE 09126-3730

DSN 452-7431
COM 011-49-6565-61-7431
WEB <http://www.spangdahlem.af.mil>

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1. PUBLICATION NUMBER

TE000-AA-MAN-010

2. VOL/PART

3. REV/DATE OR CHG/DATE

21 May 2007

4. SYSTEM/EQUIPMENT ID

2M/MTR

5. TITLE OF PUBLICATION

CERTIFICATION MANUAL FOR 2M/MTR PROGRAM

6. REPORT CONTROL NUMBER

(6 digit UIC-YY-any four: xxxxxx-03-xxxx)

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